THE SIGNIFICANCE OF SINISTRAL WHELKS FROM MISSISSIPPIAN ARCHAEOLOGICAL SITES

By

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Abstract of Dissertation Presented to the Graduate School
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MARINE SHELLS FROM MISSISSIPPIAN ARCHAEOLOGICAL SITES

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Marine shells were widely traded during the Mississippian period in the Southeast. The overwhelming proportion of shells traded were sinistral lightning whelk shells, as demonstrated by collections research presented hereinafter. I present data on archaeological shells from four Mississippian sites: Cahokia, Etowah, Moundville, and Spiro.

Research on malacological collections at the Florida Museum of Natural History demonstrates that other large marine snails were also readily available to coastal peoples. The largest shell is, and was, the horse conch. However, horse conch shells comprise a very minor percentage of shells from the archaeological sites. Clearly, some factor other than size or color motivated the shell trade, and this may have been the unique sinistral spiral of whelk shells of the genus *Busycon*.

Ethnographic and ethnohistoric resources indicate a special significance or power of spirals and/or shells. I therefore suggest a partial ideational cause for Mississippian shell trade, spurred on by thoughts concerning spirals and shells. This study falls under the rubric of structural archaeology, in conjunction with an economic approach. If spirals were important symbols, we may be able to more accurately interpret other aspects of late Mississippian society. These include dances and spiral mounds that were built in the Southeast. A more ergonomic approach suggests that sinistral shell cups were simply easier to use and hold. The significance of spirals needs to be investigated further.

New findings include Pacific coast shells from the Spiro site in eastern Oklahoma. This suggests a much larger trade network than previously thought. Another new finding is that Southeastern peoples from Cahokia used fire to aid in artifact manufacture. Many burned columellas were recovered from a shell-working area just east of Monks mound at Cahokia.

Marine shells from Mississippian sites are shown to be helpful to archaeologists to illuminate ideology, technology, and economy. A clear understanding of the zoology and natural habitat of the animals whose shells were traded is instrumental to understand trading patterns and coast(s) of origin. Additionally, this study shows that research on existing collections can be very fruitful, even if the collections were excavated over 50 years ago.

CHAPTER 1
INTRODUCTION

This dissertation examines marine shell artifacts from four inland Mississippian sites in North America. My aim is to look at marine shell artifacts in the same way that researchers have analyzed other artifact classes such as galena, lithics, and copper. Of course shellfish are widely consumed, and utilitarian implements are often made from shells. However, shell artifacts that are traded hundreds, or even thousands of miles cannot be considered as just utilitarian items. Some special significance was attached to traded shell artifacts. This introductory chapter is a synopsis of the pertinent research questions concerning marine shell trade, particularly in the Southeast, as well as brief descriptions of each following chapter.

The topics explored are, previous work on Mississippian shell artifacts; world-wide factors of shell choice in artifact manufacture; the availability of large marine snails in the Gulf of Mexico and Atlantic Ocean; the percentages from Southeastern archaeological sites of different artifacts made from marine shells and the proportions of marine shell species used to make these artifacts; and Southeastern ideology concerning spirals and shells. I collected data from 1) modern shells, 2) ethnohistoric and ethnographic sources, 3) experimental archaeology, and 4) archaeological shell artifacts. These data shed light on shell sourcing, shell bead manufacture, shell working technology, and ideology of circular directionality among Mississippian peoples.

Zooarchaeology may be defined as the study of animal remains from archaeological sites. According to that definition, this is a zooarchaeological study. Marine shells from an inland site are usually presented in a list of exotic artifacts, perhaps with a note concerning the closest body of marine water. In contrast, my focus is on the species of shells exchanged during Mississippian times, to identify and quantify the shell artifacts and to examine the shell exchange from an archaeo-ethnozoological viewpoint. The ideational aspects presented here are not often addressed in zooarchaeological reports, and the exchange of marine shells to inland sites is rarely studied from a zooarchaeological perspective.

Most studies of shell gorgets, masks, and cups have concentrated on the designs engraved on some of them or on the geographic source of marine shells from which artifacts were made (Brain and Phillips 1996; Claassen and Sigmann 1993; Hale 1976; Phillips and Brown 1978; Smith and Smith 1989; Strong 1989; Waring and Holder 1945; Williams and Goggin 1956). These studies have added greatly to our understanding of Southeastern archaeology, yet questions remain which I attempt to address. However, my focus is not on shell engravings, but on the shells themselves that were used to create Southeastern artifacts. If marine shells were thought of as a special artistic medium (apart from ceramics, copper, or stone), they may have different motif frequencies engraved on them.

The four archaeological sites included in my sample are Cahokia (Illinois), Etowah (Georgia), Moundville (Alabama), and Spiro (Oklahoma). They were chosen in order to obtain an adequate sample, since marine shell artifacts are common in the

archaeological assemblages of each of these four sites. The sites are similar because they are the remains of large villages with multiple mounds, and date to the Mississippian time period (800-1450 AD).

Many different types of artifacts manufactured from several species of marine snail shells have been found at archaeological sites throughout the Southeastern United States. Cups, gorgets, pendants, beads of several types, and masks all made from marine shells have been found (Baker 1924; Brain and Phillips 1996; Hale 1976; Holmes 1883; Kneberg 1959; Milanich 1979; Orr 1946; Phillips and Brown 1978). The majority of these artifacts were made from lightning whelk shells (Hale 1976; Milanich 1979; Ottesen 1979; Phillips and Brown 1978), however artifacts made from other species such as olive, murex, helmet shells and horse conch shells are also found (Brown 1996:417; Parmalee 1958). Beads made from the small shells of marginella and olivella snails have been found by the thousands at Spiro, Cahokia, and Ocmulgee sites (Ottesen 1979). Holmes (1883) first noted that the majority of columella (a columella is the inner portion of a snail shell - see Chapter 3) beads at Southeastern archaeological sites are from sinistral whelk shells. This observation has withstood the test of time. Other types of shell artifacts are also found, such as earrings, pins, helmet shell lips, and whole shells. Bits of marine shell were used as inlays to represent eyes in wooden masks found at Spiro, Oklahoma (Brown 1982:471), and at Key Marco, Florida (Gilliland 1989). Summaries of previous work on marine shell artifacts from inland Mississippian sites are presented in Chapter 2, focusing on the four target archaeological sites.

What was the general availability of large marine snail shells along the coast? Which large gastropod shells were most common and/or easiest to obtain? One way to understand shell availability in the archaeological past is to ascertain availability in recent times. Research was conducted using the Malacology collections at the Florida Museum of Natural History to determine the modern availability of large marine snail shells. Only fourteen species were focused upon, chosen by virtue of their size. Information was collected on locality, size, and depth at which each shell was found. Previous work by malacologists shows that different species of sinistral whelk shells have different apex angles, and this difference enables archaeologists to distinguish between the two recognized species of sinistral *Busycon*. The horse conch (*Pleuroploca gigantea*), not the lightning whelk, is the largest marine snail occurring in the Gulf of Mexico or Atlantic Ocean. The horse conch gets as large as 48cm in length and has a dextral shell, while sinistral whelks have a maximum length of 41cm. A discussion of the confusing taxonomy of sinistral whelks (*Busycon* spp.) is presented, and data gathered from malacological collections research are summarized in Chapter 3.

What were the proportions of marine shell species found at Mississippian sites, and what are the proportions of each category of shell artifact? Were marine shell columella beads and gorgets from archaeological sites also made from sinistral whelk shells? No one has systematically attempted to tabulate numbers of species, or sinistral versus dextral marine shell artifacts. My analysis of archaeological specimens from the four sites included in my sample addresses these questions. In addition to identifications and tabulations of sinistral versus dextral shell gorgets, cups, pendants, and columella

beads from archaeological sites, brief descriptions of each site (Cahokia, Etowah, Moundville, and Spiro) are provided in Chapter 4. The data indicate (using the apex angle of *Busycon* artifacts) that most sinistral marine shell cups from inland archaeological sites come from lightning whelks, rather than prickly whelks (both are sinistral), and are probably from the west coast of Florida. It also is possible to identify the genus of shell from which some of the shell gorget specimens are made, and I explain how this is done. Experimental archaeology was employed to reproduce shell cups. The presence of large numbers of burned columellas at the Cahokia site may be explained by the fact that it is easier to work burned shell than unburned shell. Some of the olivella shell beads and an abalone shell recovered from the Spiro site (in what is now eastern Oklahoma) originated on the Pacific coast. This indicates a much larger trade network than heretofore known. The archaeological sample from the four sites indicate that the great majority of artifacts were made from lightning whelk shells, confirming the suggestions of previous researchers.

If marine shell artifacts were conceptualized as inherently sacred objects, we may see differences in frequencies of motifs among the different artistic media from obtained from the four archaeological sites in my sample. Frequencies of motifs on four media are tallied: marine shell, ceramics, copper, and stone. Results of this analysis are presented in Chapter 5.

An analysis of notable world-wide instances of ethnographic and archaeological marine artifact manufacture reveals two inherent qualities important when choosing shells: 1) color or iridescence throughout the shell, and 2) shell shape. Previous work

shows that most artifacts in the Southeast were not made from the largest shells available, horse conch shells. In addition, dextral shells of the same family, and of similar shape and size, were rarely exchanged among Southeast Mississippian sites. Lightning whelk shells were the overwhelming choice for manufacture of artifacts, and have no unique color within the shell matrix. Some other factor besides color, shape or size influenced the choice of shell for artifact manufacture, and this was ideology. As Milanich (1979:86, 95) has pointed out, the reason for this may lie in the fact that these shells are sinistral, or that they symbolize spirals. To be sure, marine shells were used in the Southeast as exotic, prestige items, perhaps to legitimate high social status (Brown et al. 1991; Helms 1992). However, if this was the *only* incentive for obtaining marine shells, then any marine shell would suffice, as long as the shells were large enough to make artifacts such as cups, gorgets and masks. Clearly, a particular kind of shell was targeted, perhaps due to ideas of circular directionality. This type of study falls under the rubric of structural archaeology, but does not, however, exclude a more economic approach. The theoretical underpinnings and ramifications of such a study are considered in Chapter 6.

What is the importance of the study of marine shells within archaeology and anthropology? If, as I intend to support, sinistral whelk shells were targeted due to the symbolism of the direction of the spiral, then we must reconsider our ideas on past motivations behind the acquisition of sinistral shells in the Southeast. Malacologists everywhere recognize these shells as peculiar *because* they are sinistral. It seems likely that indegenous Southeastern peoples might also have believed these shells to be peculiar

or special. Ideology is most readily accessible through ethnography, ethnohistory, and extant members of the groups of people in question. Data presented in Chapter 6 include spiral dances, modern Creek, Seminole, and Muspa thoughts on shells, and descriptions of the sacred, spiral fire by William Bartram (1976 [1789], 1928 [1791]).

Conclusions and a summary of the significant findings are in Chapter 7. Shells should not be viewed simply as exotic materials to be used as materials on which engravings were made, but rather as legitimate objects of study in themselves. The presence of Pacific coast shells at Spiro, Oklahoma, supports the contention of some Spiro researchers that Spiro was primarily a trading post. That fire was used to heat shell in order to make it easier to work is supported by archaeological, ethnohistorical, and experimental archaeological research. Apex angles on sinistral *Busycon* shells are identified as one way to resolve at least the general coastal locale where the shells originated. If most lightning whelk shells originated along the Florida west coast, as I support, a number of questions arise concerning Florida economy. If the main motivating factor in obtaining lightning whelk shells was ideology, there are implications for both archaeologists and anthropologists. The ideology of circular directionality in the Southeast may be directly associated with the direction of snail or gastropod coiling. Concepts of spirals may help archaeologists to interpret other archaeological remains, such as spiral mounds. The study of shells in archaeology truly has evolved, as Lynn Ceci (1989:1) stated, to a treatment "of these objects as sensitive markers for social, political, economic, and ideational processes among prehistoric, historic, and living societies."

CHAPTER 2
PREVIOUS RESEARCH ON MISSISSIPPIAN MARINE SHELL ARTIFACTS

Introduction

It is important to understand prior works on Mississippian and early historic marine shell artifacts. This will give the reader a basis for understanding and critical review. A general description of the varieties of shells, kinds of artifacts found, and the geographic extent of marine shell exchange during Mississippian times is presented first. This is intended to give the reader an idea of the types and numbers of marine shell artifacts that have been recovered. Previous attempts to source the coast of origin of marine shells are summarized. Next, information is presented on preceding studies of shell artifact types, including ethnohistoric and modern descriptions of marine shell usage by indigenous people from inland locales. For ease of reading, each category of artifact is examined separately.

Marine shell use is an ancient and persistent practice in Southeastern North America. Marine shell artifacts have been found from Archaic sites dating to 3000 B.C. (Milanich 1979:87). Cups were made from lightning whelk shells at the Archaic sites of Indian Knoll and at Carlson Annis, both in Kentucky. The utilization of marine shell artifacts continues to this day among some tribes, such as the Creek and Seminoles who were forcibly moved to Oklahoma from their homelands in Georgia and Alabama during the "Indian Removal" of the early 1800s (Moore 1994:132). Some modern Creek

peoples in Oklahoma currently use trumpets made from horse conch shells (and other materials) to call parishioners to begin Sunday church services. I know of no archaeological examples of trumpets made from any species of shell. However, Bartram (1928:400 [1791]) explains that at the spring planting, all the people of one "Muscogulge" (Creek) town were called together to the town square "by the sound of a conch shell."

In North America, locally available shells were also used to make utilitarian tools, such as fishhooks, knives, hoes, spoons, tweezers, and so on (Holmes 1883). Artifacts were fashioned from local freshwater mussel shells to make hoes and implements for processing corn, as ethnographic and archaeological studies indicate (Gradwohl 1982; Parmalee 1958; Titterington 1977:9). In and around coastal areas, marine shells were used to make a variety of tools (Marquardt 1992; Webster 1970). Nonetheless, I am concerned here with marine shell artifacts used by people of the Southeast that made their way to inland archaeological sites.

Shell beads have been studied more intensely in recent years. The 1986 Shell Bead Conference indicates a growing interest in this subfield (Hayes et al. 1989). Recent work corroborates the intensification of studies on shell beads (Carlson 1993; Thomas 1996; Trubitt 1996). Beads made from different species of marine shell at Mississippian archaeological sites include marginella, olive, and helmet. Disk beads and columella beads (known as barrel or cylindrical beads) were made from large marine shells such as lightning whelks and horse conchs, though species identification of these types of beads are not possible at this time.

Shell Artifacts and the Southeastern Ceremonial Complex

Marine shell artifacts help to reveal an extensive geographic range of related artifacts, usually termed the Southern Cult (Muller 1989; Waring and Holder 1945) or the Southeastern Ceremonial Complex (Galloway 1989; Howard 1968). The Southeastern Ceremonial Complex (SCC) was first presented as an heuristic device by Waring and Holder in 1945, defined by artistic motifs and "ceremonial" objects associated with them. James A. Brown (1976:115) reworked the definition to include "an interregional interaction sphere co-extensive with the distribution of complex Mississippian cultural systems." The SCC is a Mississippian culture, with the added accoutrements of ceremonial objects and characteristic motifs on similar materials, including copper, marine shell, lithics, and ceramics. Copper, marine shell, and some lithics were from exotic locales, and were probably acquired by a simple system of exchange, such as down-the-line trade (Muller 1995). This complex of similar artifacts, consisting of copper, galena, shell, and some artistic motifs, refers to late prehistoric times, before Europeans arrived in the Americas. The core area of the SCC is bounded by the Cahokia site in Illinois to the north, the Hollywood site on the Savannah River in Georgia, the Mount Royal site near the east-central Florida coast, and the Spiro site on the Arkansas River in eastern Oklahoma (Howard 1968).

However, the archaeological sites that have marine shell range much further. The northern limits of marine shell artifacts are the northern plains. Beads made from *Busycon* spp. shells were found in South Dakota near the Oahe Dam (Lehmer 1954), and in Ontario, Canada at the Huron Kirche site (Pendergast 1989). Whelk shell (species not

mentioned) gorgets and cherts from Illinois are markers for the late prehistoric Devils Lake-Sourisford burial complex in eastern North Dakota and surrounding areas (Vehik and Baugh 1994:258-259). Marine shell beads made from whelk and olive shells were found at the Mississippian site of Aztalan in southern Wisconsin (Barrett 1970). A "shell mask gorget" made from the outer whorl of a lightning whelk was found in Iowa, along the Iowa River near its confluence with the Mississippi River (Collins 1995). The Fort Ancient site of SunWatch near Dayton, Ohio, had a lightning whelk pendant, disk shell beads of an unspecified type, and many marginella beads (Coovert 1988). To the southwest, a sinistral *Busycon* spp. gorget with a design similar to those found at the Spiro site in Oklahoma was found near Killeen, Texas (Highwater 1983:299). Even farther south, olive shell and sinistral whelk shell beads were found with a marine shell gorget near McAllen, Texas (Hester and Rodgers 1971). The eastern extent of marine shell gorgets is Virginia (Smith and Smith 1989:11). At least one is definitely made from a sinistral whelk shell found in Russell County, Virginia (Maus 1995), and another found in Washington County has the well-known cruciform motif engraved on the concave side (Peck 1995). The latter was found in association with olive shell and marine shell columella beads. Smith and Smith (1989) report two marine shell mask gorgets from Stafford County, Virginia. Based on the motifs of the Southeastern Ceremonial Complex (Waring and Holder 1945), there appears to be little connection to the shell engravings of the Huastecs of Vera Cruz, México (Anton and Dockstader 1968:70), which have as their hallmark intricate fenestrated patterns cut out of shell. Phillips and Brown (1978:166)

suggested a Huastecan connection with the Spiro site, however Brown (1996:20) notes a decline in the theory of Mesoamerican influence on Spiro art styles.

For a long time, archaeologists have attempted to source the coast of origin of marine shells found at inland archaeological sites. Most suggest that the shells came from the Atlantic Ocean or the Gulf of México (Brown et al. 1990:260; Yerkes 1989:97), but more specific locations are important for establishing prehistoric connections. A definitive provenance would help to settle questions of cultural interaction and complexity, and movement of resources and ideas. Two projects have attempted to identify sources of shells: a master's thesis by H. Stephen Hale (1976), and a more recent work by Claassen and Sigmann (1993). Both conclude that archaeological shells came from the eastern Gulf of México, however, Hale is more specific. He made the assumption that shells came from areas where the species is most abundant. Hale showed, using data from modern collections, that lightning whelks are most common along the west coast of Florida (1976:71). Hale (1976:71) noted that "the area of maximum occurrence [of lightning whelks] is along the beaches in Monroe, Collier and Lee Counties." These counties are in south and southwest Florida. In contradiction, he also claimed (1976:v) that "The most probable source of this shell for trade to Midwestern archaeological sites was the Apalachicola Bay Area."

The method employed by Claassen and Sigmann (1993) to source marine whelk shells relied on the assumption that whelk snails incorporate the unique chemical signature of their immediate environment into their shells. They asserted that this chemical signature can be used to identify the specific freshwater drainage that the shells

lived closest to. This method has great potential, but requires much biological research in order to show the basic assumption to be true.

Another problem in sourcing shells used in trade is inherent in identification and nomenclature. This has led Phillips and Brown (1978) to suggest a possible connection between Spiro with Huastecan shell artifacts. I will quote their work at length to illuminate the research problem (Phillips and Brown 1978:26-27):

> Dr. Pulley was also of the opinion that designation of a subspecies was not important for our purposes. He stated that most of the undecorated cups in the McDannald collection are 'what I call *Busycon perversum* (Linné), but which many other authors (Hollister 1958; Abbott 1974) call *Busycon contrarium* (Conrad)' (letter of February 18, 1975). These shells, we understand, could have come from any part of the Gulf coast from the Florida Keys to the Straits of Yucatan... But Dr. Pulley goes on to say (in the first letter cited) that there are also in the McDannald collection *'fragments of other species which lead me to believe that they were all collected from the Mexican coast at least as far south as Cabo Rojo.'* These 'other' fragments are: *Pleuroploca* (formerly *Fasciolaria*) *gigantea* and *Cassis madagascarensis*. The latter, he adds, 'could only have come from the Florida Keys or the Veracruz coast.'...Ever since the first examples of Southeastern figural art in copper and shell became known, the question of Mesoamerican connections has been argued back and forth but never settled to anyone's satisfaction, the difficulty being the lack of any tangible evidence of contact. From the standpoint of decorative technology in shell, the place to look for such contacts has always been the Huasteca, where a vigorous tradition of shell engraving flourished at just about the right time. Nevertheless, statements in the archaeological literature have concentrated on the South Atlantic and Florida Gulf coasts as the probable source of raw materials for all Southeastern shellwork. *Pulley's assertion that at least some of the Spiro shell may have come from the Huasteca (Tamaulipas-northern Veracruz) could be the first break in an impasse that has prevailed for over a century.*" [emphases added]

This passage underscores the significance of correctly identifying the place of origin of marine shells. Phillips and Brown (1978) did not realize that horse conchs (*Pleuroploca gigantea*) occur regularly along both east and west Florida coasts. Helmet shells (*Cassis madagascariensis*) are also found on the Florida west coast all the way to the panhandle (see Chapter 3).

The importance of pinpointing the source of shells as, for example, the southwest Florida coast versus Huastecan Mesoamerica would be in building hypotheses of social complexity for a specific area. A definitive locale may change our ideas about the rise and fall of the stratified societies believed to have occurred in these coastal areas (Marquardt 1987, 1988; Milanich 1994:362). If such a high value was placed on the shells, the coastal peoples who controlled shell harvesting would gain more wealth than they otherwise would if the shells were of no importance.

Two factors support that marine shell artifacts were not copies of Mesoamerican artifacts: 1) marine shell artifacts were used since Archaic times in the Southeast, and 2) engraving styles differ. The antiquity of marine shell use at inland archaeological sites in the Southeast (see above) suggests a long tradition of shell acquisition and modification. This tends to discount the hypothesis that Mississippian peoples learned shell working techniques from the Huastecs (see Phillips and Brown 1978). Moreover, the particular type of fenestrated engraving found in México is rare from Southeastern archaeological sites, tending to negate the Huastecan connection. Although most gorgets are engraved (incised), fenestrated "spaghetti style" gorgets are uncommon (Brain and Phillips 1996).

Marine Shell Artifacts and Mississippian Cultural Complexity

A debate surrounding the nature of shell beads in a cultural context has arisen among archaeologists. One basic question is whether beads functioned as wealth or status items (Prentice 1987; Thomas 1996). However I shall leave this complicated topic to other workers, since the distinction between wealth and status is problematic even in extant cultures. A related topic is whether or not shell beads functioned as money.

Additionally, the topic of craft specialization in marine shell bead production has relevance to the question of social complexity among Mississippian cultures (Muller 1987; Pauketat 1987; Prentice 1983; Yerkes 1983). Increasing interest in the study of shell beads and their production can only enhance our understanding of past peoples.

The exchange of marine shells may not have been an unchanging, consistent phenomenon. There may have been long periods of time during which very little, if any, marine shell was deposited at Southeastern archaeological sites (Cobb 1991). The assumed lack of shell artifacts from some time periods was used by Cobb (1991) to postulate that shell artifacts, along with other artifacts, were used as symbols to reproduce social systems. Cobb views changes in the frequencies of exotic trade goods as a correlate to changes in cultural complexity. In contrast, Jon Muller (1989:14) states that, "there were few times after Late Archaic when such 'valued' raw materials as native copper or *Busycon* shells were not moving across the Southeast." The changes in frequencies of exotic trade items may be a result of our incomplete archaeological record, since, "the archaeologically surviving artifacts marking long-distance interaction *may* have been only a small part of the goods that were exchanged." [emphasis in the original] (Muller 1995:320). A theory postulated to explain the use of imported materials, the "Prestige Goods Economy" infers that exotic trade items were used to legitimate high social rank (Brown et al. 1990). For a different viewpoint, see Muller (1995), who calls into question the Prestige Goods Economy since long-distance trade may have been of the simplest type. Again, exchange and use of marine shell artifacts becomes important in our understanding of social relations.

Ethnohistoric Accounts and Archaeological Finds

I will now present information from ethnohistoric sources concerning marine shells, and artifactual data on marine shells from Mississippian sites. Emphasis will be placed on the four target sites: Cahokia, Etowah, Moundville, and Spiro. Ethnohistoric accounts can help us better understand the role that marine shell artifacts had in the lives of Mississippian peoples. All ethnohistoric data are from tribes who once inhabited the Southeast. This will, in turn, aid in understanding the archaeological finds.

The use and trade of marine shells was recorded by early observers. Du Pratz (1975:290 [1774]) states that, "The largest of the shell-fish on the coast is the Burgo, . . . The shells have long been in request for tobacco-boxes" and (1975:364 [1774]) that "The womens ear-rings are made of the center part of a large shell, called burgo, which is about the thickness of one's little finger. . ." Dumont de Montigny, writing about southern Louisiana in the early 1700s states

> There are found besides, on the shores of the sea, beautiful shells of a spiral shape called 'burgau.' They are very suitable for the manufacture of pretty tobacco boxes, for they carry their mother-of-pearl with them. It is of these burgau that the Indian women make their earrings. For this purpose they rub the ends of them for a long time on hard stones and thus give them the shapes of nails with heads, in order that, when they insert them in their ears, they will be stopped by this kind of obstruction. . . (in Swanton 1946:486).

John Lawson (1967:203) tells us that shell gorgets were highly valued, the going rate being three or four dressed buckskins. Although Adair does not mention the name of the shell, he does describe the price of a shell bead (Adair 1971:178 [1775]):

> Before we supplied them with our European beads, they had great quantities of wampum; . . . made out of conch-shell, by rubbing them on hard stones, and so they form them according to their liking. With these they bought and sold at a stated current rate, without the least variation for circumstances either of time or place; . . .

> Formerly, four deer-skins was the price of a large conch-shell bead, about the length and thickness of a man's fore-finger; which they fixed to the crown of their head. . ."

He is clearly describing columella beads (see below). These short passages give us a clue about the great worth placed on shells, and even pieces of shells. A good deal of effort went into the procurement of a large bead made from one of these marine shells. We have no hard evidence, and can only speculate on what might have been exchanged for whole marine shells.

Cups

Ethnohistoric accounts

The ethnohistoric accounts of James Adair, William Bartram, Jonathan Dickinson, and a ranger for General Oglethorpe all attest to the use of marine shell cups as containers for a tea known as *cassina*, a caffeinated beverage. John Swanton (1928b:503) learned from Creek Chief James Islands that "large conch shells" were still used to take "black drink" in the early 20th century. Adair (1971:49 [1775]) describes them being retrieved: "consecrated, large conch-shells, out of a place appropriated for containing the holy things," and as containers for *cassina* (Adair (1971:25 [1775]). Dickinson describes the process of making *cassina* on the east coast of Florida (1985:25 [1699]):

> In one part of this house where the fire was kept, was an Indian man, having a pot on the fire wherein he was making a drink of the leaves of a shrub (which we understood afterwards by the Spaniard, is called *casseena*), boiling the said leaves, after they had parched them in a pot; then with a gourd having a long neck and at the top of it a small hole which the top of one's finger could cover, and at the side of it a round hole of two inches diameter, they take the liquor out of the pot and put it into a deep round bowl, which being almost filled containeth nigh three gallons. With this gourd they brew the liquor and make it froth very much. It looketh of a deep brown color. In the brewing of this liquor was this noise made which we thought strange; for the pressing of this gourd gently down into the liquor, and the air which it contained being forced

> out of the little hole at top occasioned a sound; and according to the time and motion given would be various. This drink when made, and cooled to sup, was in a conch-shell first carried to the Casseekey...

A ranger for General Oglethorpe, among the Creek in 1739-1742 (Mereness 1916:220) also writes of marine shells used as containers for *cassina*:

> The head Warriours of the Indians brought us black Drink in Conkshells which they presented to us and as we were drinking they kept Hooping and Hallowing as a Token of Gladness in seeing us. This Drink is made of a Leaf Called by the English Casena (and much Resembles the Leaf of Bohea Tea.) It is very Plenty in this country.

William Bartram relates the events at an important ceremony (1976:358 [1789]): "The assembly being now seated, and the house illuminated, two middle aged men,... come in together at the door, each having very large conch shells full of black drink, and advance. . ."

Cassina is well-known to have been ingested for purposes of purification (Fairbanks 1979). Merrill (1979) gives a very detailed description of the use of *cassina* among Southeastern groups. It was also poured on the body (Howard 1968:76). The main ingredient of *cassina* was leaves from the yaupon holly plant (*Ilex vomitoria*). This plant is now commonly used as an ornamental shrub in Florida. Swan (in Schoolcraft 1855) states that "The black-drink is a strong decoction of the shrub well known in the Carolinas by the name of Cassina, or the Uupon Tea. . . they style it *white-drink*; but the liquor of itself, which, if strong, is nearly as black as molasses, is by the white people universally called *black-drink*" (emphasis in the original). *Cassina*, or the white drink, also called *asi*, was called the black drink by Europeans (Boyd 1955:251; Claiborne 1964:518 [1880]; Gatschet 1969:174, 176; Stiggins in Swanton 1928b:541; Sturtevant 1955:208; see also Swanton 1928b:577, 582, 588, 298, 603, 606, 608). These separate

accounts indicate that *cassina* was thought of as the white drink among Southeastern peoples (Hudson 1976:226). The reader is referred to Hudson's (1979) excellent book for a description of *cassina*.

An important aspect of shell cups is the social context in which they were used. The most notable ceremony among pre-contact Southeastern people is the *busk*, or green corn ceremony, during which *cassina* was administered, both internally and externally (Hudson 1979). This has been illustrated by Jacques Le Moyne, an artist who was a companion of René de Laudonnière in his expedition to Florida in 1564. The text accompanying the illustration said that *cassina* was drunk in a large shell (Lorant 1946:93). An early 1800s French account (Claiborne 1964 [1880]) described a funeral custom in which mourners drank "a beverage called the white drink." Another aspect of the funeral tradition was also illustrated by Le Moyne (in Lorant 1946:73, 115), in which shell drinking cups were placed over the graves of the dead owners. Shell cups were used in drinking *cassina*, however gourd calabashes were also used (Claiborne 1964 [1880]; Milford 1956:139 [1802]; Taitt, in Mereness 1916:502-503).

Archaeological accounts

The majority of marine shell cups were made from lightning whelk shells, *Busycon sinistrum* (Brown 1996:417; Milanich 1979:85; Phillips and Brown 1978:26), and a few were made from helmet and horse conch shells. Cups were made from the outer whorl of a shell; the columella and inner whorls were either cut out or hammered out (Phillips and Brown 1978:28). Some cups were engraved and others were plain. A shell cup made from a helmet shell was found at Etowah (van der Schalie and Parmalee

1960:44), and all of the others at Etowah were made from *Busycon* whelks (Larson 1971:63). None of the shell cups from Etowah were engraved. The greatest quantity of cups were excavated from the Spiro site. At least two marine shell cups have been found from Moundville (Moore 1905:161).

By far, the most cups from any Southeastern site were found at the Spiro site. At least 1000 engraved shell cups were excavated from Spiro, and about one or two thousand plain shell cups also were found (Brown 1982:469). The sheer numbers of whelk shell cups at Spiro indicate an enormous investment of resources in the acquisition of lightning whelk shells. Add on to that the time and effort it took to engrave so many shells, and we can see that the shell cup artifacts represent a great amount of wealth and/or status. Also at Spiro, most of the shell cups were deliberately broken before interment in the graves (Brown 1982:479). Ottesen (1979:397) tabulated the number of "marine shell vessels", and found that 254 from the Spiro site were made from conch shells of the genus *Strombus*. However, this data set is probably in error, since no mention was made of *Strombus* vessels in James A. Brown's most recent and complete work on Spiro (1996), nor in any of his previous works. Brown states that "small numbers" of horse conch cups were found, and one was made from a helmet shell (1996:417), in contrast to Phillips and Brown (1978:27), who counted three unengraved helmet shell cups.

No discussion of marine shell cups is complete without mentioning the seminal work of Philip Phillips and James A. Brown (1978). They discussed motifs engraved on marine shell from the Spiro site, and sketched out the history of Spiro site excavations.

They included 550 engraved cups, and 115 engraved gorgets in their sample. Only three engraved cup fragments from horse conch shells were reported.

Ceramic effigies of lightning whelk shell cups have also been found at archaeological sites. Shell cup effigies were found at the Sawmill Mound and at the Florence Street cemetery from Cahokia (Emerson et al. 1983; Milner 1984:478). They are also found at sites in Missouri (Chapman 1980), Florida (Moore, C. 1922), Arkansas (Holmes 1886:384), and at the Moundville site (Peebles 1979; Steponaitis 1983b:76). Effigies of freshwater clamshells were found at Moundville (Peebles 1979), as well as other effigy pots of animals such as birds, turtles, fishes, bats, and frogs (Moore 1905; Peebles 1971). Lightning whelk shell cups are the only exotic object that ceramic effigies were patterned after. This fact signals their cultural importance.

Gorgets

Ethnohistoric accounts

Shell gorgets were also used in historic times. Bartram (1976:299 [1791]), in describing participants in a contest called the ball game, tells us that the "champions likewise were well dressed, painted, and ornamented with silver bracelets, gorgets and wampum..." An early 1700's description of shell gorgets comes from Dumont de Montigny (in Swanton 1946:486), who was familiar with southern Louisiana:

> The savages also wear on their necks plates 3 or 4 inches in diameter made of pieces of this shell, to which they give a round or oval shape by grinding them on stones in the same manner. They then pierce them near the edge by means of fire and use them as ornaments.

Hawkins (1938:44 [1848]) describes Creek place names in the late 1700's and early 1800's, and gives the name of one town as *Im-mook-fau.* Its translation is "a gorget made

of a conch." Could *im-mook-fau* be the indigenous Creek word for what we call a gorget? Linguistic research may help to clarify the definition of this word.

Archaeological accounts

Some shell gorgets from archaeological sites are elaborately engraved, while other are plain. Some shell gorgets are not engraved. Brain and Phillips (1996) provided a thorough description of the motifs. Engraved shell gorgets and other shell artifacts (and the designs on them) from Tennessee were studied in detail by Kneberg (1959). Gorgets are usually engraved on the concave side of the shell, except for shell mask gorgets (see below) and the Cox Mound style of gorget with a bird motif (Brain and Phillips 1996:9). The species of snail shell from which gorgets were made has rarely, if ever, been identified, due to the fragmentary nature of the remains.

Shell masks are usually subsumed under the gorget category, and are called shell mask gorgets. They occur from North Dakota to Virginia, and from Ohio to Alabama (Smith and Smith 1989:11). The majority lack engraving, and most are engraved on the convex side of the piece of shell. Shell masks are usually found with male burials (Smith and Smith 1989).

Shell gorgets are made from the outer whorl of a shell, finished in a circular or oval shape. Phillips and Brown (1978) included 115 engraved shell gorgets from the Spiro site. The later work of Brain and Phillips (1996) showed that at least 125 have been found from Spiro. At least eight gorgets were excavated from the Moundville site (Brain and Phillips 1996), and these were found only in the cemetery areas (Peebles 1971:81). Sixty-three gorgets were excavated from the Etowah site, and most were

engraved (Brain and Phillips 1996). Only one engraved shell gorget was excavated from Cahokia site (Brain and Phillips 1996), despite the abundance in marine shell-working debitage there (Baker 1929; Mason and Perino 1961:554).

Pendants

Shell pendants have been found at archaeological sites, as well as depictions of them on engraved whelk shell cups and on copper plates (Brown 1982:470; Fundaburk and Foreman 1957). Images of sinistral whelk pendants can sometimes be determined on engraved artifacts from sites in Tennessee, Alabama, Georgia, Oklahoma, and Illinois (Kneberg 1959; Phillips and Brown 1978; Waring and Holder 1945:12). Most shell pendants are made from lightning whelk shells. Depictions of shell pendants are found in the "bird-man theme" (Strong 1989), as well as with "god-animal" representations (Waring and Holder 1945:20).

Pendants have been recovered from all of the four archaeological sites scrutinized here. Many shell pendants were found at the Spiro site (Brown 1996:591), though specimen counts vary. Hamilton (1952:56) estimates that about 500 lightning whelk pendants were removed from Spiro previous to the controlled excavations. Ottesen (1979:394) lists 45 marine shell pendants from Spiro. Sixteen pendants were excavated from the Cahokia site (Ottesen 1979:394), some of which were illustrated by Titterington (1977:33). An unspecified number of columella pendants were also found at the Etowah site (Kelly and Larson 1957:44). C. B. Moore (1905:180) found some marine shell pendants at Moundville (Larson 1971:62).

Marine Shell Beads

The study of shell beads from archaeological sites is a subdiscipline that has recently expanded. Lynn Ceci has declared that the study of shell beads within anthropology is now a valid field (Ceci 1989:2). William H. Holmes (1883:219) defined three basic categories of shell beads: 1) small shells with holes for suspension; 2) disk beads made from bivalves or the outer whorls of snail shells; and 3) marine shell columella beads, known as massive or barrel beads. Great quantities of shell beads have been found in some locations. Uncontrolled excavations at Spiro unearthed between 800 and 1,200 pounds of unspecified shell beads (Hamilton 1952). Each bead type will be discussed separately, in addition to a discussion of chert microdrills, which are believed to have been used to make holes in the beads.

Chert microdrills

Chert microdrills used for drilling holes in shell to make beads have been studied most extensively by Richard W. Yerkes (Yerkes 1983, 1991, 1993). Yerkes approached the subject of craft specialization using the production of chert microdrills as evidence for shell bead workshops. First reported by Mason and Perino (1961:554) from the Cahokia site, microdrills were found in association with shell working debitage in the form of "thousands of shell beads and enormous quantities of burned conch columellas and shell scrap." The process of producing chert microdrills involves breaking chert nodules so that smaller pieces can be worked into microdrills or microblades (Yerkes 1991). Yerkes used experimental archaeology and incident light microscopy to confirm that microdrills were used to drill shell (1983).

Shell bead production areas, inferred by concentrations of microdrills, have been found at Cahokia and surrounding sites in the American Bottom (Trubitt 1996; Yerkes 1991), Moundville (Peebles and Kus 1977:442), sites in central Tennessee, northern Alabama, western North Carolina, northeastern Georgia, and the Zebree site in northeast Arkansas (Yerkes 1993:237). In spite of the large quantities of shell beads from Spiro, no shell bead workshop in the form of either shell debitage or microdrills has been identified there. Microdrills are solely a Mississippian phenomenon, since they have not been found in contexts dating to earlier time periods (Yerkes 1993:240).

An alternative method of piercing disk beads is by the use of fire. High heat burns off the organic constituents of shell, leaving a more brittle material (see Chapter 4). This is supported by the ethnohistoric account of Garcilaso de la Vega (1988:330 [1605]), who noted that pearls were made into beads by piercing them, "with hot copper needles."

Whole marine shell beads

Various kinds of smaller, whole marine shells used as ornaments in the Southeast include olive (*Oliva* spp), dwarf olive (*Olivella* spp. or *Jaspidella* spp.), and marginella (*Marginella* spp.). The only alteration made to these small shells is a hole in the spire for stringing. Some freshwater snail shells were used as well, such as rocksnails (*Anculosa* spp. and *Campeloma* spp.) (Trubitt 1996:70).

Between 57,000 and 72,000 marginella beads were found at Cahokia, in association with burials, and apparently sewn onto bark cloth (Milner 1984:480; Ottesen 1979:398). Some of these are pictured by Titterington (1977:40). The marginella beads

from Powell mound (see Chapter 4) were apparently sewn onto bark cloth, since they were recovered in the matrix in neat rows (Ahler and DePuydt 1987). According to Baker (1932:149), Etowah yielded four olive shell (*Oliva)* beads, and about two dozen marginella shell beads. At least 2,069 marginella beads were excavated from Spiro, (Brown 1996:283). Olive shell beads of the genus *Olivella* were numerous at Spiro, totaling 14,937, and olive shell beads of the genus *Oliva* total seven (Brown 1996:283).

Disk beads

Disk beads are recognized by their thinness in relation to the diameter of the disk. The hole runs perpendicular to the growth lines of the shell, since they were usually made from the outer whorl of a marine snail shell. James Brown (1996:577) believed that disk shell beads are the most common marine shell bead at Mississippian sites. At least 19,835 disk shell beads were recovered from controlled excavations at Spiro (Brown 1996:283). These are made from an unidentified shell, but are assumed to have been made from whelk shells (Brown 1996:577). A high status burial from Mound 72 at Cahokia (see Chapter 4) rested on "a platform of shell beads" (Fowler 1991:3), which consisted of 20,000 disc and columella beads (Iseminger 1996:34). Moore (1905:147) reported that "many shell beads" were found in association with a burial in Mound C at Moundville; these could be disk beads or columella beads.

Columella beads

Beads made from the columellas of marine shells have many forms and have been called tubular, barrel, massive, and a host of cylindrical and spherical terms (Brown 1996; Holmes 1883:223; Moore 1905:154; Ottesen 1979:377). The important defining

characteristic is that the hole in these larger beads runs parallel to the growth lines of the columella. Unfortunately, it is difficult to determine the species from which columella shell beads were made. Despite the usual difficulty, sometimes identification of the snail genus from which columella beads were made is possible. Holmes (1883:223) was the first to note this, stating that the beads "often retain the spiral groove as well as other portions of the natural surface." This spiral (or columella) groove slants toward the left or right, depending on the sinistral or dextral shell from which it came. The closest readily recognizable analogy is either the "back slash" or "forward slash" of today's computer keyboards. Sinistral shells have columella grooves with a back slash, while dextral shells have columella grooves with forward slash. Figure 2.1 illustrates how some columella beads retain the columella groove, and why the direction of the slant is important in identification of a sinistral or dextral shell. The direction of the slant does not change when the bead is turned 180°. The only shells in the Atlantic Ocean or Gulf of México from which large sinistral columella beads can be made are of the genus *Busycon*.

Columella beads have also been recovered in great numbers. At least 43,277 beads made from marine shell columellas were found at Spiro (Brown 1996:283). As noted above, the "principle figure" from Mound 72 at Cahokia was interred on a platform of 20,000 marine shell beads of an unspecified type (Fowler 1991; Iseminger 1996). Another 30,000 disc beads were also buried in Mound 72, Cahokia (Trubitt 1996:266). "Many" tubular shell beads were found in Mound C at Moundville (Baker 1932; Moore 1905:154).

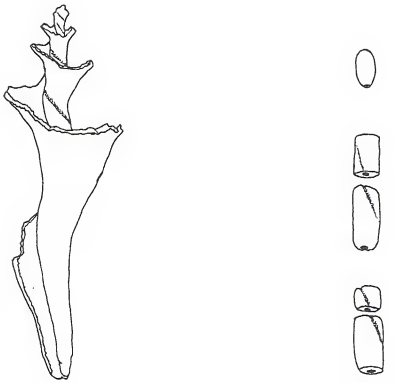


Figure 2.1 Bead reduction from sinistral whelk shell. After Holmes (1883)

Miscellaneous

Other kinds of marine shell artifacts occur in far less numbers from Mississippian sites. These include scallop shells (Pectinidae), sunray venus shells (*Macrocallista nimbosa*), Atlantic cockle shells (*Dinocardium* spp.), ark shells (*Arca* spp.), rangea clam shells (*Rangia* spp.), helmet shells (*Cassis* spp.), top shells (*Cittarium* spp.), horse conch shells (*Pleuroploca gigantea*), knobbed whelk shells (*Busycon carica*), channeled whelk shells (*Busycotypus canaliculatus*), moon shells (*Neverita* spp.), nutmeg shells (*Cancellaria reticulata*), dove shells (*Columbella* spp.), marsh periwinkle shells (*Littorina irrorata*), scotch bonnet shells (*Phalium granulatum*), murex shells (*Phyllonotus* spp.), rock shells (*Thais* spp.), bubble shells (*Bulla* spp.), fighting conch shells (*Strombus alatus)*, cone shells (*Conus* spp.), and tulip shells (*Fasciolaria* spp.) (Baker 1923,1932:148; Parmalee 1958; Trubitt 1996:86; van der Schalie and Parmalee 1960). The suite of marine molluscan species recovered from Mississippian sites indicates they came from the Gulf of México or Atlantic Ocean (Abbott and Morris 1995), except *Busycon carica* and *Busycotypus canaliculatus*, both of which only occur in the Atlantic Ocean (Abbott and Morris 1995).

CHAPTER 3
MALACOLOGY AND SHELL AVAILABILITY

A thorough knowledge of the shells available is an important step in understanding shell choice for artifact manufacture. One of the ways to achieve a sense of shell availability in the past is to find out what kinds of shells are currently obtainable. This approach is most applicable for studying shell collections from the recent past. It is also necessary to understand the ecology and habits of the animals being studied. The Florida Museum of Natural History (FLMNH) Malacology Collection houses a large assemblage of specimens, both wet-preserved and dry-preserved. These collections are from many parts of the world, and are considered to be among the finest in the country. I examined shells from 13 species of marine snails in this collection. My choice of species to examine is discussed below. Brief descriptions of the geographic range and preferred habitats are also provided.

One of the problems encountered while addressing issues of a zoological nature is scientific nomenclature. Disagreements among zoologists concerning the delineation of a species or a subspecies often occur. Additionally, the specific name, generic name, and sometimes the family or order nomenclature require revisions. This sometimes leads to confusion among non-zoologists (or even zoologists themselves). Frequent name changes have hampered attempts by archaeologists to determine which animal's shell

was used for artifact manufacture. The nomenclature used throughout this dissertation follows the taxonomic scheme presented by the Council of Systemic Malacologists, American Malacological Union, in *Common and Scientific Names of Aquatic Invertebrates from the United States and Canada: Mollusks* (Turgeon et al. 1988).

The lightning whelk is a good example of the potential confusion caused by changes in nomenclature. The scientific name for the lightning whelk has changed three times, from *Busycon perversum* (Linné 1758) to *Busycon contrarium* (Conrad 1840) to *Busycon sinistrum* (Hollister 1958). Some malacologists think that all sinistral whelks should be called by one species name (Abbott 1974:223; Pulley 1959:75), and others think that several sinistral whelks in the family Melongenidae represent different species. Currently, three species of sinistral whelks are recognized by scientists (Turgeon et al. 1988). These are the snow whelk (*Busycon laeostomum* Kent 1982), the lightning whelk (*Busycon sinistrum* Hollister 1958), and the prickly whelk (*Busycon pulleyi* Hollister 1958). These species are believed to be capable of interbreeding, but are recognized as different species based on their geographic separation (allopatric speciation). The difficulties inherent in this nomenclature may have discouraged some archaeologists from assigning scientific names to some shell artifacts.

The topic of snail handedness has implications for both zoological systematics and archaeology. Handedness refers to the coiling direction of the snail, dextral (right-handed) or sinistral (left-handed). Dextral means that with the apex pointing upward, the opening of the shell (aperture) will be on the right side. Most species are normally dextral (Gould 1995; Robertson 1993; Vermeij 1975). Even gastropods without shells

(slugs, for example) are usually dextral (Robertson 1993:115). Occasionally, an individual of a species that is normally dextral may have a sinistral shell, and vice versa. Malacologists do not know why the overwhelming majority of species have dextral shells.

Only two genera of marine snails in the western Atlantic Ocean, Gulf of Mexico and Caribbean Sea are normally sinistral. These are *Triphora* and three currently recognized whelk species of the genus *Busycon* (Abbott and Morris 1995; Rehder 1996). Triphoras are tiny (6 mm maximum) and live in shallow water on or near sponges, on which they feed (Rehder 1996:446). Triphoras look like ceriths, and are closely related to them. Lightning whelks are easily identified because they are sinistral, and are discussed in detail below.

Materials and Methods

Most of the artifacts were made of large shells, such as lightning whelks. In order to expedite the analysis of shells in the Malacology Collections, I examined only the species that are able to attain a length greater than 17.78 cm (7 inches). Since marine bivalves are rarely, if at all, present in the target archaeological sites, I did not investigate them. Only thirteen marine snail species in the western Atlantic coast and Gulf of Mexico reach at least 17.78 cm in length. According to Abbott (1968; 1974), and Hollister (1958), the following thirteen species fit this parameter:

Strombidae
  Queen conch (*Strombus gigas*); to 30.5 cm
Cassidae
  Cameo helmet (*Cassis madagascariensis*); to 23 cm
  Caribbean helmet (*Cassis tuberosa*); to 23 cm

Ranellidae
Atlantic trumpet triton (*Charonia tritonis variegata*); to 33 cm
Angular triton (*Cymatium femorale*); to 21 cm
Tonnidae
Giant tun (*Tonna galea*); to 18 cm
Melongenidae
Splendid whelk (*Busycon candelabrum*); to 23 cm
Knobbed whelk (*Busycon carica*); to 36 cm
Prickly whelk (*Busycon pulleyi*); to 21 cm
Lightning whelk (*Busycon sinistrum*); to 41 cm
Channeled whelk (*Busycotypus canaliculatus*); to 19 cm
Fasciolariidae
True tulip (*Fasciolaria tulipa*); to 19 cm
Horse conch (*Pleuroploca gigantea*); to 58 cm

It is possible that collecting biases of the malacologists have skewed the sample, because large shells require large spaces for storage, large specimens are sometimes not collected. Other biases may be collection of larger specimens by amateurs, a concentration of specimens from a favorite collecting location, or a lack of specimens from another collection. The FLMNH Malacology collection focuses on Florida land and freshwater mollusks, but collections from the Gulf of Mexico, the Atlantic Ocean, and the Caribbean Sea are well-represented (Fred G. Thompson, personal communication). Ecological information on each of the species examined is presented below.

Dry-preserved shells from thirteen different marine snail species were examined. Total length of 1428 specimens was measured (in centimeters). Locality information was also recorded, consisting of country, state, county, town, etc. Specimens were not included that did not have locality data. The depth at which the specimen was found was also recorded, since depth may be an important consideration in shell choice. Depth data was not regularly incorporated into the Malacology database, but malacologists have a

general idea of the depths at which various species are found (Abbott 1974). I input all of the data into a relational computer database (Microsoft Access).

Figure 3.1 illustrates the terminology concerning different areas of a shell. Some definitions (after Abbott 1968:51) are as follows:

aperture - the opening in the last whorl
apex - the first-formed, narrow end of the shell, usually of several whorls
columella - the solid pillar at the axis of the shell, around which the whorls grow
lip - final edge or margin of the body whorl
nodule - a round growth on the spire
outer whorl - the last and largest coil of a snail shell
shoulder - part of the whorl projecting or bulging farthest from the axis
siphonal canal - anterior, semitubular, extension of the aperture
spine - a sharp, elongated nodule
spire - the whorls at the apical end, exclusive of the last whorl

Results

Table 3.1 summarizes the information obtained from the Malacology Collection. Appendix I presents all of the data. Size range information is included in order to provide a better comprehension of the completeness of the Malacology collections. As indicated, a large size range for all of the species was in the FLMNH . As might be expected, the largest shells are from the horse conch, *Pleuroploca gigantea*, since this is the largest snail in the Atlantic Ocean and the Gulf of Mexico. Only specimens of three species show appreciable numbers (over 10%) of shells greater than 20 cm total length; the queen conch (*Strombus gigas*), the lightning whelk (*Busycon sinistrum*), and the horse conch (*Pleuroploca gigantea*). Only lightning whelks and horse conchs have shells larger than 30 cm. Although queen conchs (*Strombus gigas*), trumpet tritons (*Charonia*

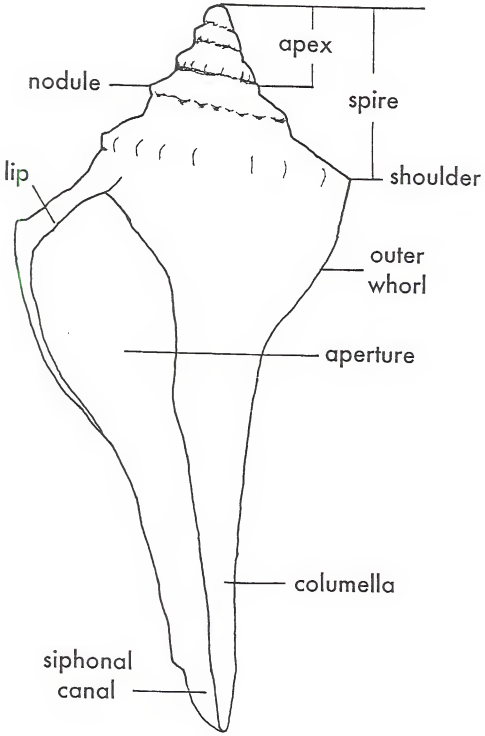


Figure 3.1. Shell terminology.

TABLE 3.1

MALACOLOGY DATABASE SUMMARY

Species	Size Range (cm)	Total Number		>20cm Number		>30cm Number	
Strombus gigas	0.5-27.6	231	16%	78	37%	0	
Cassis madagascariensis	4.8-29.3	39	3%	13	6%	0	
Cassis tuberosa	1.1-27.4	77	5%	3	1%	0	
Cymatium femorale	2.0-17.3	86	6%	0		0	
Charonia variegata	0.8-28.1	61	4%	10	5%	0	
Tonna galea	0.9-21.6	116	8%	1	0%	0	
Busycon carica	1.7-22.5	131	9%	2	1%	0	
Busycon candelabrum	4.3-17.0	15	1%	0		0	
Busycon sinistrum	1.4-35.9	348	24%	50	23%	7	17%
Busycon pulleyi	3.8-25.1	16	1%	3	1%	0	
Busycotypus canaliculatus	2.3-19.9	82	6%	0		0	
Pleuroploca gigantea	0.6-49.1	225	16%	53	25%	35	83%
TOTALS		1427		213		42	

variegata), and knobbed whelks (*Busycon carica*) attain lengths greater than 30 cm, no specimens of this size is included in the Malacology Collections.

Discussion

The data from the FLMNH Malacology collection show that specimens come from all along the Atlantic seaboard, the Caribbean, and the Gulf of Mexico (Appendix I). No collecting locations appear to have been overlooked. My study corroborates previous observations of malacologists (see below).

The most important information that my investigation of shells from the FLMNH collection adds to existing knowledge concerns the range in sizes and collection localities of those species with large shells. If size was the major factor in choice of shells, then queen conchs (*Strombus gigas*) or particularly horse conchs (*Pleuroploca gigantea*) would have been harvested for artifact manufacture. Queen conchs contribute 37% of the sample of shells getting larger than 20 cm, while lightning whelks represent 23%. Horse conchs account for 83% of all shells greater than 30 cm, with lightning whelks accounting for the remainder. If shell choice were simply a matter of gathering the largest shells, one would expect to find similar proportions of shells among archaeological artifacts.

Water depth is an important factor to consider when shell availability is being addressed. The splendid whelk (*Busycon candelabrum*) seems to occur regularly at depths that only scuba divers would normally attempt to reach (Appendix I). Larger lightning whelks are available in shallow water off the Florida coast, but, interestingly,

are not common from other areas. Only four of the lightning whelks in my study larger than 17.78 cm are not from Florida waters (Appendix I), and all of them are from deep water. This study confirms observations of other workers that lightning whelks are most common from the west coast of Florida. Large prickly whelks in my sample also seem to occur in deeper water, in agreement with comments by Abbott (1974:222-223). Both of the helmet snails (*Cassis* spp.) included in my study also seem to be more prevalent in deeper, tropical waters. The trumpet triton and the angular triton are also species that usually require a dive to obtain. Only one angular triton in my study was larger than 17 cm. Giant tun shells were regularly found at depths of greater than 20 meters. Horse conchs are available from shallow water (less than 1 meter).

In the following discussion, particular attention is paid to the sinistral whelks, since it has long been known that these shells were commonly used for artifact manufacture (Milanich 1979). The descriptions are arranged first by whelk snails, followed by information on other snails. Data are from Abbott (1974), Rehder (1996), and Abbott and Morris (1995) unless otherwise noted.

Whelk Snails

An excellent ecological paper by Hulda Magalhaes (1948) discusses whelk snails living near Beaufort, North Carolina. She showed that in her study area, the ratio of lightning whelks to channeled whelks to knobbed whelks is 1:2:33. Lightning whelks in this area live near the northern limit of their range, and are not thought to breed (Magalhaes 1948:406). Also, lightning whelks do not exceed 26 cm total length and average 14 cm in this area. Whelk shells exhibit characteristic breakage patterns after

the live snail has been eaten by a stone crab (*Menippe mercenaria*). In order to get at the meat, a stone crab breaks the outer edge of the siphonal canal and aperture, the body whorl is broken, and sometimes the columella is broken off (Magalhaes 1948:400). Sea gulls (*Larus* spp.) are other predators of small snails. They expose the soft body parts by dropping the snails from the air onto a hard surface (Magalhaes 1948:401). All whelks are carnivores. Both Magalhaes (1948:399) and Paine (1962) showed that species of *Busycon* prey on at least 21 species of bivalves. Age and growth studies have not been attempted, and Magalhaes (1948:397) claimed that these types of studies "cannot be applied with any accuracy to Busycons." Whelks are mobile, migrating both seasonally and diurnally; seeking prey, and avoiding predators, excessive heat, cold, or dehydration. The maximum distance covered in one day is 40 meters (Magalhaes 1948:394).

Sinistral whelks

Nomenclature for sinistral whelks continues to be in a state of flux, and has been since the time of Linnaeus. Genetic studies may resolve their taxonomic affiliation. More detailed descriptions of the shell characteristics, ecology, and distribution of sinistral whelks are presented below (see Figures 3.2 and 3.3). All of the sinistral whelks of the genus *Busycon* have been placed into a separate subgenus, *Sinistrofulgur* (Hollister 1958:84). This is based on the sinistral shell alone, in order that other characters used to place dextral whelks into specific groups may also be used for sinistral whelks.

Hollister recognized four species of *Sinistrofulgur*; *B. aspinosum* offshore from Sarasota, FL, *B. perversum* from Campeche Bay, Mexico, *B. pulleyi* from the north Mexican coast to Louisiana, and *B. sinistrum* from Cape Hatteras, NC to west Florida.

Busycon aspinosum and *B. perversum* are not currently recognized. The prickly whelk (*Busycon pulleyi*) breeds with the lightning whelk (*Busycon sinistrum*) in the Gulf of Mexico where their ranges overlap "giving rise to the possibility that this complex is one species, namely *perversum* Linné" (Abbott 1974:223).

***Busycon sinistrum* Hollister 1958.** Historically, the nomenclature has changed frequently for this animal. The synonomy of *Busycon sinistrum* is as follows (after Hollister 1958:85): *Pyrula perversa* (Linné) Lamarck 1816, *Fulgur perversus* Gill 1867, *Busycon perversum* Chenu 1859, *Fulgur perversus* "Linné" Tryon 1881, *Fulgur perversum* "Linné" Dall 1890, *Busycon perversum* "Linné" Johnson 1934, and *Busycon contrarium* (Conrad) B. Smith 1939. Hollister thought that *Murex perversa* Linné 1758 was synonymous with *Busycon perversum* (see above), rather than with *B. sinistrum*.

The lightning whelk is most common on the west Florida coast (Abbott 1974: 222; Magalhaes 1948:406), and ranges from Cape Hatteras to Mobile, Alabama, and also occurs off the Yucatán coast. It has not been reported from Campeche Bay to Mobile Bay (Hollister 1958). Lightning whelks are found in warmer water than knobbed whelks (Magalhaes 1948), and seem to migrate to shallow water in the winter months in Florida (Paine 1963:64). A gracile form with smooth, round shoulders is found today around Longboat Key, Sarasota, Florida. Specimens have been found off Yucatán that have large spines curving toward the aperture. One dextral specimen is known from Fort Myers Beach, Florida (Hollister 1958:87), and another from Sanibel Island, Florida (Shiflett 1972). The foot and mantle are almost always deep black except in young and

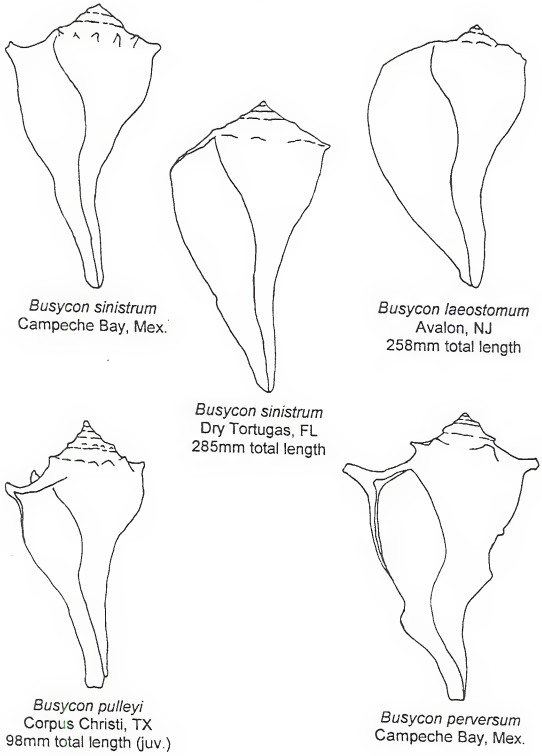


Figure 3.2. Variants of sinistral whelk shells.

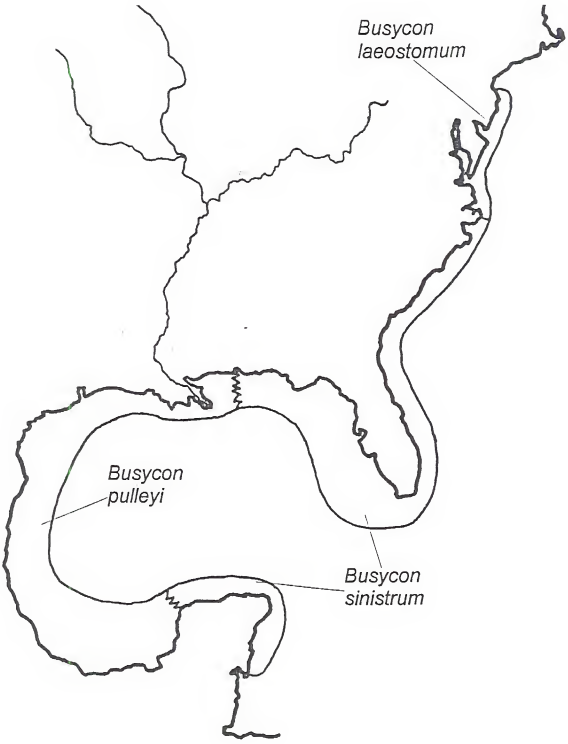


Figure 3.3. Sinistral whelk species geographic ranges.

very old individuals (Hollister 1958:86; Magalhaes 1948:403). Young shells are striped parallel with the growth lines, with white and reddish brown to olive stripes edged with yellow on one side. Shells become lighter with increasing age, very old shells being white. The angle of the apex is about 105° (Hollister 1958:85). In Alligator Harbor, Florida, lightning whelks "appear to be highly mobile" (Paine 1962:517). This species prefers to eat bivalves.

***Busycon pulleyi* Hollister 1958.** Former species names for the prickly whelk (in Hollister 1958:85) include *Murex perversus* Linné (1758), *Pyrula perversa* Kiener (1840), *Pyrula Kieneri* Philippi (1848), *Fulgur gibbosum* Conrad (1853), *Busycon gibbosum* Conrad (1862), *Busycon kieneri* Philippi (1867), *Busycon perversum kieneri* Philippi (1934), and *Busycon perversum* Linné (1939). The geographic distribution of this species is in the Gulf of Mexico from Louisiana and to Campeche Bay Mexico. The spire is somewhat turreted, and the columella is sinuous (Hollister 1958:89-90). Abbott (1974:222-223) reports that they are dredged from 7.3 to 12.2 meters. The prickly whelk has a spire angle of about 90 degrees (Abbott 1974:222).

***Busycon laeostomum* Kent 1982.** The snow whelk has only recently been named, and occurs only off the coast from New Jersey to northern Virginia, offshore (Kent 1982). Abbott (1974:222) was aware of the existence of these rare, deeper-water specimens (gathered by scuba divers), but did not consider them to constitute a distinct species. The snow whelk grows to be large, at least 25.8 cm. The apex angle ranges from 92° to 126°, with an average of 105° (Kent 1982:101). The head and foot are black.

Dextral whelks

***Busycon carica* (Gmelin 1791).** The knobbed whelk ranges from Massachusetts to Cape Canaveral, Florida in shallow sandy water. It lives in very shallow water to at least 5 meters. The foot and mantle of knobbed whelks are gray to almost black (Magalhaes 1948:403).

***Busycon candelabrum* (Lamarck 1816).** The splendid whelk occurs at depths from 37 to 64 meters and ranges in the Gulf of Mexico from Texas to Yucatan, Mexico. Scientists did not even know of the existence of dextral species of the genus *Busycon* in the Gulf of Mexico until the 1950's when, "shrimping activities in Yucatan waters brought to light a number of shells that were thought to be new" (Hollister 1958:79). The depth at which it is commonly found reduces the chances of being captured for artifact making.

***Busycotypus canaliculatus* (Linné 1758).** The channeled whelk is common in shallow sandy areas from Massachusetts to the Atlantic coast of eastern Florida. This species occurs on sand or mud intertidally to just below the low-tide level. It is abundant in the shallow bays of southern New England. It barely reaches the minimum of 17.78 cm to be included in my study. The shell is thinner than other whelk species, and the spire is turreted (Magalhaes 1948:385). The foot and mantle are pale grayish white.

Dextral Marine Snails

***Strombus gigas* (Linné 1758).** The queen conch, also known as the pink conch, ranges from the West Indies to Southeastern Florida and the Florida Keys. It only rarely occurs on the southwest coast of Florida, and can be found in one to 12.2 meters of

water, usually near eel-grass. This shell was commonly used for artifact manufacture in the Caribbean before Europeans arrived, particularly from the columella and outer lip of the shell (Keegan 1984). Conch meat is a popular ingredient in stews and chowders where it occurs. Queen conchs eat algae.

***Cassis tuberosa* (Linné 1758).** The Caribbean helmet ranges from North Carolina to Brazil in sandy shallow water. It is rare in Florida and northward, but common in the Caribbean Sea. Both of the helmet snails listed here prey on sea urchins.

***Cassis madagascariensis* (Lamarck 1816).** The cameo helmet ranges from North Carolina to the West Indies, and grows larger than the Caribbean helmet. It can be found on sand in shallow water to nine meters deep, and is rare in Florida.

***Cymatium femorale* (Linné 1758).** The angular triton is also a shallow water species, ranging from southeast Florida to Brazil. It is most commonly found in the West Indies in eel-grass, and is only rarely found in the lower Florida Keys.

***Charonia tritonis variegata* (Lamarck 1816).** The Atlantic trumpet triton can be found in moderately shallow water from southeast Florida to Brazil. It is rare in Florida and moderately common in the West Indies near reefs.

***Tonna galea* (Linné 1758.** The giant tun ranges from North Carolina to Brazil. It lives in moderately deep water to 33 meters, and it is an uncommon species. The shell is thin, but sturdy.

***Fasciolaria tulipa* (Linné 1758).** The true tulip ranges from North Carolina to the West Indies and Brazil. It can be found on sand and mud, intertidally to nine meters

in depth. It just barely grows to be larger than my minimum requirement of 17.78 cm total length. Tulip snails are carnivorous, feeding upon other gastropods.

***Pleuroploca gigantea* (Kiener 1840).** The horse conch ranges from North Carolina to Florida and to the western Gulf of Mexico. It can be found from low-tide level to six meters deep. Horse conchs may migrate into shallow water in summer on the Florida coast (Paine 1963:65). This is the largest snail in its range, and one of the largest in the world. It is carnivorous, feeding mostly on marine gastropods (53 of 66 items ingested are gastropods) (Paine 1963:66). The brown periostracum of these animals flakes off easily once the shell is dry, leaving behind a white shell.

Implications for Archaeological Studies

What importance does all of this information have for archaeologists working with marine shell artifacts in eastern North America? There are several points that should be emphasized. One is that the knobbed whelk (*Busycon carica*) does not occur in the Gulf of Mexico. Therefore, any occurrence of the shell of this species at an inland archaeological site infers contact with people on the Atlantic coast. This species should not be confused with the splendid whelk (*Busycon candelabrum*), since the presence of a shell from the splendid whelk implies contact with the Gulf of Mexico.

A very important piece of information that may be obtained from archaeological sinistral whelk shell artifacts is the apex angle. This may be viewed as a distinguishing characteristic between lightning whelks and prickly whelks. Lightning whelks have an apex angle of about 105°, while prickly whelks have an apex angle of about 90°. If there is a large enough sample size from an archaeological site, we can hypothesize that the

shells are from one or the other species. The apex angle of snow whelks is also about 105°, but it is not likely that archaeological shell artifacts came from this species for the following reasons:

- there have been few specimens found, only 13 as of 1982
- it is not certain that the snow whelk is a distinct species, though it is recognized by Turgeon et al., 1988
- they occur in deeper waters
- they occur offshore

Depth is another factor to consider. Lightning whelks, queen conchs, knobbed whelks, and horse conchs may be easily found in shallow water. Prickly and snow whelks are found in deeper water than lightning whelks. Abbott (1974:222-223) states that the perverse whelk is dredged from 7.3 to 12.2 meters, making it hard to obtain.

The build of the shell is important . Some lightning whelk shells are extremely gracile, while those of the prickly whelk are much more robust. The columellas of lightning whelks are less heavy and sinuous than those of prickly whelks.

Archaeologists must also be aware that shells may sometimes show signs of regular breakage patterns that are not the result of human activities. This is more pertinent for archaeologists working at coastal sites. As mentioned above, animals such as stone crabs break whelk shells in a habitual manner (Magalhaes 1948:400). Other animals also make shell alterations in prey species. For example, octopuses sometimes make holes in marine snail shells in order to get at the soft tissues inside. These holes look very much like drill holes that humans may make. Archaeologists must first rule out any type of animal-generated breaks in shells before attributing them to humans.

Some archaeologists have assumed that marine shells were sought simply for their size. If it was true that size was the main factor (other things being equal), then

similar proportions of shells should be found at the target archaeological sites. If size was the only reason for the use of marine snail shells for artifacts, then horse conch shells would be the most numerous marine shell used since they are the largest. Table 3.1 shows that of all of the shells, horse conchs comprise 83% of all shells larger than 30 cm. Assuming that the specimens in the FLMNH collection reflect the availability of large marine snails, then horse conch shells are expected to comprise 25%, queen conchs 37%, and lightning whelks only 23% of the shells longer than 20 cm in the archaeological deposits. This is not the case, as the next chapter shows.

CHAPTER 4
ARCHAEOLOGICAL SAMPLES

Marine shell artifacts are abundant in the four archaeological sites chosen for investigation. A total of 17,645 shell artifacts, representing 20 different molluscan genera were examined from these four sites. Two of these sites, Cahokia and Spiro, have far larger samples than Etowah and Moundville. The contexts with which shell artifacts are associated are important, since interpretations of artifact function and type are sometimes dependent upon provenience. Descriptions of each of the four sites and excavation strategies provide information on the contexts with which shell artifacts are associated. This is followed by an account of the methods used here to identify the taxon and record data from archaeological specimens made of marine shell. The procedure for determining whether a shell gorget was made from a dextral or sinistral shell is also given. Next, I supply summary information of the data. Ratios of dextral versus sinistral columella beads and gorgets are tabulated, as well as identification of the species from which shell pendants and cups were made. An analysis of apex angles from sinistral whelk shell artifacts reveals that most are from lightning whelks, rather than prickly whelks. Artifacts from the Cahokia site show that Mississippians probably used fire (at times) to remove the columella from the rest of the shell.

In order to obtain a large sample of marine shell artifacts, I chose sites that are known to have produced quantities of them. Additionally, my sample is restricted to Mississippian sites (800-1450 A.D.), since any hypotheses concerning ideology drawn from the ethnographic present become less viable as more time passes. Connections among the four sites (Cahokia, Etowah, Moundville, and Spiro) are indicated by exotic artifacts, described below. Spiro has long been known to have had large quantities of marine shells, in fact, more marine shell artifacts have been found there than at any other inland North American site. Some marine shell artifacts from Spiro originated on the Pacific coast. Debitage from a shell-bead production area at Cahokia also provided an opportunity to test whether columella beads were made from sinistral or dextral shells. A map of all the site locations is presented in Figure 4.1. I had intended to include the Ocmulgee site as well. Unfortunately, the time constraints involved in obtaining proper authorization, from both the National Park Service and the Creek Nation in Oklahoma, to view the collections have prevented me from analyzing the Ocmulgee material for this dissertation. It is hoped that an investigation of Ocmulgee artifacts will be possible in the near future.

Site Descriptions

Cahokia

Cahokia is located in the American Bottom, an area defined as part of the Mississippi River valley bounded by the mouth of the Illinois River and the mouth of the Kaskaskia River (Fowler 1969:1-5). The appellation Cahokia is presumably derived

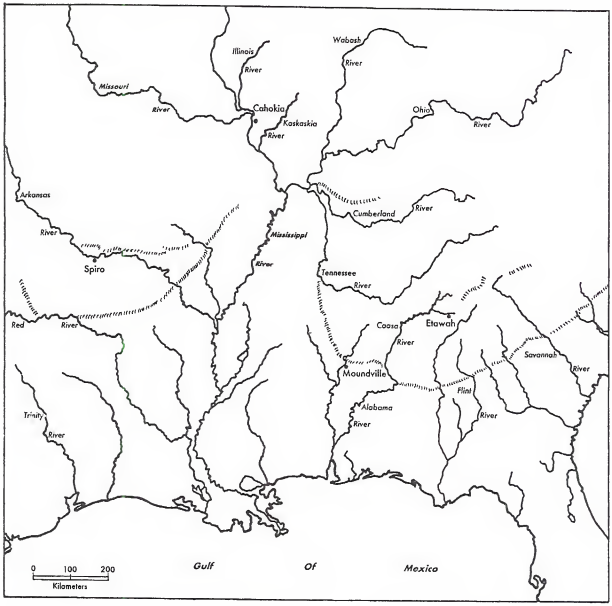


Figure 4.1. Site location map.

from a village of the Illinois tribe that lived nearby, which du Pratz called "Caouquias" (du Pratz 1774:300-301). The site straddles a county line; Madison County at the north end and St. Clair County to the south (Fowler 1989:8). Cahokia is the largest Mississippian site in North America. It has at least 120 mounds (Iseminger 1996:32), including Monks mound, the largest mound north of the Teotihuacán site in México. The Cahokia site, owned by the state of Illinois, now comprises the Cahokia Mounds State Historic Site. Cahokia has provided the materials for a wealth of archaeological research on the development of complex societies, population estimates, exchange of exotic goods, and craft specialization. The locations of most of the archaeological structures at Cahokia mentioned in the text can be seen in Figure 4.2. The mounds are arranged around many plazas (Fowler 1989:11). Monks mound is 30.5 meters (100 feet) high, and covers an area of land 316.1 by 240.8 meters (1037 by 790 feet) (Reed 1969). Cahokia covers about eight square kilometers (5 square miles). The site had been in use since Paleoindian times (8,000 B.C.), and occupation was continuous through the Mississippian period. It was abandoned by about 1400 A.D. Population estimates of Cahokia at its zenith, about 1100 A.D., range from 8,000 to 40,000 (Fowler 1989:7; Iseminger 1996), the most cited figure being from 30,000 to 40,000 residents (Milner 1990:11). An area known as "downtown Cahokia" is defined by an 83 hectare (200 acre) palisaded enclosure known as the "stockade" (Anderson 1969:89-99; Iseminger 1996:32). Remains of a shell bead storage facility with 1,960 disk beads were found 1.5 kilometers west of Monks mound (Titterington 1977:9). About 914.4 meters (3,000 feet) west of Monks mound in Tract 15A are the remains of a circular construction of wooden cedar

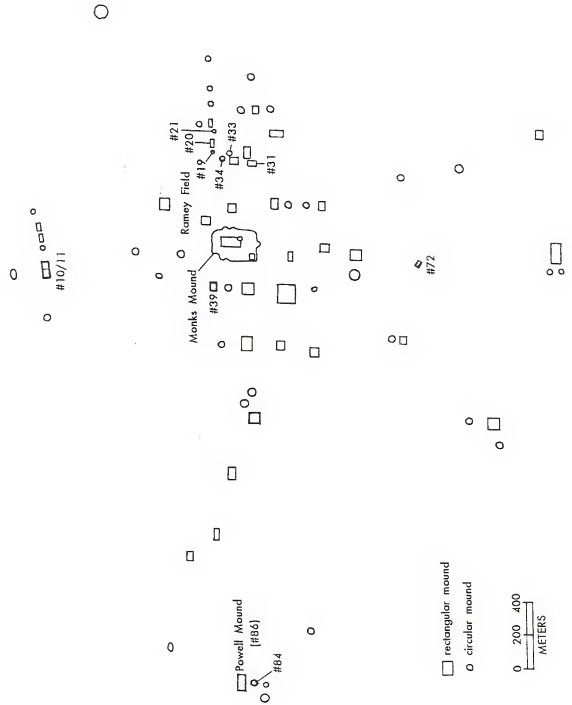


Figure 4.2. Cahokia site map. After Fowler (1989:figure 2-7).

posts known as an "American Woodhenge." This structure was about 125 meters in diameter (410 feet), and had alignments with the summer and winter solstices, and the equinoxes (Fowler 1989:32; Wittry 1969). The mound numbering system used in the following descriptions is that of Fowler (1989).

Cahokia was first systematically excavated by Warren K. Moorehead in the 1920's (1922, 1923, 1929). He focused on describing and mapping the mounds, although he also performed minor excavations, including Sawmill mound (#39), the James Ramey Mound (#33), and Kunnemann mound (#10 and 11). He found numerous burials, potsherds, bone artifacts, shell artifacts, and lithics.

Ramey Field and Mound 34 - Cahokia

In 1956 Gregory Perino, of the Gilcrease Foundation in Tulsa, OK, excavated portions of an area east of Monks mound known as the Ramey Field, and Mound 34 inside of Ramey Field (Fowler 1989; Mason and Perino 1961; Perino 1959). These areas may date from 1250 to 1500 A.D. (Brain and Phillips 1996:267), however Pauketat (1993:148) argued for earlier dates of 1150 to 1250 A.D. Mound 34 was a conical mound east of Monks mound, and has been mostly destroyed (Fowler 1989:88). Perino excavated a trench through Mound 34, as well as a refuse pit to the north of the mound. Sherds from pottery originating in the Caddo area, and some that came from the lower Mississippi River valley were found (Perino 1959). Lithics from Arkansas were also recovered (Fowler 1989:88; Perino 1959). Shell-working debitage and a few chert microdrills were found at Ramey Field (Mason and Perino 1961:554). Brain and Phillips

(1996:267) pointed out that all of the artifacts from Cahokia associated with the Southeastern Ceremonial Complex are associated with Ramey Field and Mound 34.

Powell mound - Cahokia

Powell mound was 2.6 kilometers west of Monks mound, about 13 meters high, and 94.5 by 54.9 meters at the base (Ahler and DePuydt 1987). It was due north of Mound 84 (now obliterated) which was due west of the southwest corner of Monks mound (Ahler and DePuydt 1987:4). In 1930, the owners of the Powell Mound (#86 of Fowler 1989:162) began demolishing it. Concomitant with this demolition, some interesting materials were recovered by Arthur R. Kelley of the University of Illinois, who witnessed the destruction (Fowler 1989:165; Titterington 1977:15). Chert microdrills at the base of the mound indicate a shell artifact workshop (Yerkes 1989:97). Powell mound was constructed in at least two stages, the first being a truncated pyramid mound, and the latter stage gave it the final appearance of a rounded linear ridge-top mound (Ahler and DePuydt 1987:3-4). Two burial pits were sandwiched between these two mound building stages. Although one burial pit had already been destroyed by the time Kelley got there, the other contained remains of 20 to 30 human burials, accompanied by "a very large number of disc shell or *Marginella* beads, but in no instance were both types of beads found with the same burial" (Titterington 1977:2). Some of these marginella beads, still embedded in the matrix in neat rows, are now curated at the University of Illinois Museum of Natural History, and the Lab of Anthropology, Department of Anthropology, University of Illinois, Urbana-Champaign.

Controlled excavations of Powell mound began in 1931 under the direction of Thorne Deuel of the University of Chicago (Ahler and DePuydt 1987:5). Little remained of the mound, and a detailed analysis of the material remains was not published until 1987 (Ahler and DePuydt 1987:5). Ceramics indicate that Powell mound was constructed between 900 and 1150 A.D. (Ahler and DePuydt 1987). Much locally produced pottery was found, but exotic ceramics were also found. One sherd was tentatively identified as originating from the Caddo area, and two more (Nodena White-filmed and Red-and-White Painted) came from the lower Mississippi River valley (Ahler and DePuydt 1987:23). Chert artifacts were recovered, 44 in the form of microdrills, indicating a shell bead workshop (Yerkes 1989:97).

Kunnemann mound - Cahokia

After Moorehead's excavations in 1921, Preston Holder partially excavated the Kunnemann mound (#10 and 11) in 1955 and 1956. Holder's reports are not formal publications, but rather presented papers, correspondence, etc. A publication of Holder's work was prepared by Tim Pauketat from Holder's field notes, correspondence, and reports on file (Pauketat 1993). The Kunnemann mound was 10.64 meters high, and is located in what is termed the Kunnemann Tract (Fowler 1989), about 1.5 kilometers north of Monks mound, and across the channel of Cahokia Creek (Pauketat 1993:8). The Kunnemann mound had two parts, a conical mound conjoined on top of a lower terrace. Structural remains, such as post pits and wall trenches were recovered, in addition to hearth features and human burials. The mound dates from 1000 to 1200 A.D. (Pauketat 1993:5). Carbonized fabric was recovered, and a quantity of charcoal suggests that the

building on the mound had burned down (Pauketat 1993:43). Sixty-eight chert microblades, a sandstone saw, and unfinished marine shell beads are evidence of a shell bead workshop.

Mound 72 - Cahokia

Mound 72 was a small ridge-top mound 2.5 or 3 meters high (Fowler 1989:148). Its location is due south of the same point on the southwest corner of Monks mound that is due east of Mound 84 (see above), and forms a 90° angle with this line (Ahler and Depuydt 1987:4). Fowler (1991) discussed possible alignments of Mound 72 with other mounds at Cahokia. Most of the features date to around 1000 A.D. (Fowler 1991:3). Mound 72 entombed a high status human burial (often referred to as the "Beaded Burial") that was placed on a platform of marine shell beads (see Chapter 2), however, other burials from Mound 72 indicate individuals of both high and low status (Fowler 1991:3). Since some artifacts included in my sample are from various locations within Mound 72, these features excavated from Mound 72 are mapped in Figure 4.3.

Exotic materials found in the mound include lithic arrowheads originating in northeast Oklahoma, some from Wisconsin, and others from southern Illinois. Ceramics indicate connections with the Lower Mississippi River valley (Fowler 1991:14, 23). One of the human skeletons from Mound 72 has had isotopic analysis performed by Stanley H. Ambrose from the University of Illinois. This individual's isotopic signature suggests that the person came from the Gulf coast or Caribbean area (Ambrose, personal communication 1996). If true, this may indicate more direct connections to coastal peoples. Ambrose's isotopic analyses of the Mound 72 burials are not yet published.

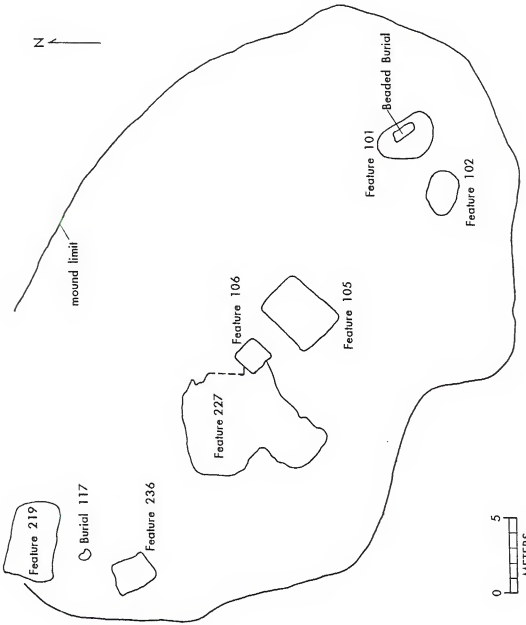


Figure 4.3. Mound 72, Cahokia site. After Fowler (1991).

Etowah

The Etowah site is located above the fall line in northeast Georgia on the Etowah River, a tributary of the Coosa and Alabama Rivers. It was first excavated by Cyrus Thomas in 1884 (Thomas 1985:292 [1894]). Locations of the major features of Etowah are shown in Figure 4.4. The name of the site is probably an anglicization of the Muskogean word *etulwa* (also spelled *talwa* [Wright 1986:23] and *i:tálwa* [Bell 1991:333]), meaning town or township (Moore 1995). Kelly and Larson (1957:44) thought that at the time of European contact the site was occupied by Creek tribal ancestors. The Etowah site had at least seven mounds, with a canal or moat surrounding the center of the site and running into the Etowah River (Kelly and Larson 1957:41; Moorehead 1932). Mound A was about 21 meters high (70 feet) (Moorehead 1932:4); Mound B about 10 meters high (35 feet) (Thomas 1985:295 [1894]), and Mound C was about 5 or 6 meters high (18 feet) (Larson 1971). Mound C had many burials, some with exotic grave goods. A total of 350 human burials have been excavated from the whole site, and most of the burials date from 950 to 1440 A.D. (Larson 1971:61).

Warren K. Moorehead of the Phillips Academy in Andover, MA, excavated various locations at Etowah beginning in 1925 and continuing through 1927 (Moorehead 1932). He unearthed burials in Mound C and from the Etowah Village immediately to the north of the large mounds, and provided a description of the kinds of artifacts recovered with each burial. Copper, lithic, shell, ceramic, textile, and pearl bead artifacts were found. His excavations indicate that individuals buried in Mound C had greater amounts, and more exotic, artifacts interred with them than those from the Village area.

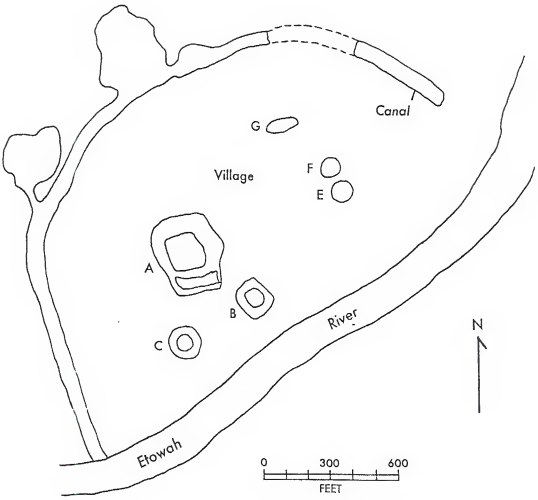


Figure 4.4. Etowah site map. After Cyrus Thomas (1985:299 [1894]).

However, the presence of all ages and both sexes seems to infer prescribed status (Larson 1971:66), in other words, a person was probably born with high or low status. Lewis H. Larson excavated at Etowah from 1954 through 1958 (Stuart 1991:58). In addition to house remains and middens, Larson found a total of 210 burials, some with elaborate grave goods (shell, copper, lithics, wood, cloth, tortoise shell, and ceramics) (Kelly and Larson 1957:41). The burials were in simple pits or log tombs.

Indications of exotic trade include limestone-tempered pot sherds, possibly from Tennessee (Wauchope 1966:256), marine shell beads, *Busycon* spp. and *Cassis madagascariensis* bowls (van der Schalie and Parmalee 1960:45), Dover flint from Tennessee or southern Illinois, shark teeth, and sea turtle shell (Larson 1971:66). Brain and Phillips (1996:173) suggest a direct connection with the Lake Jackson site in Florida, based on shell gorget designs. Copper may have been mined locally in northeast Georgia (Larson 1971:64). However, the design styles on two copper headdresses indicate a connection with the Moundville site (Brain and Phillips 1996:158), and the style of the copper-covered wooden masks are similar to Spiro site materials (Brain and Phillips 1996:159).

Moundville

The Moundville site in west-central Alabama has remains of over 20 mounds arranged around a plaza (Figure 4.5), dating from 1050 to 1550 A.D. (Steponaitis 1983b). It is on a bluff of the Black Warrior River, about 2.5 kilometers south of the city of Tuscaloosa (Steponaitis 1983b:3). The largest mound, Mound B, is about 17 meters high and 100 meters squared at the base. Clarence B. Moore excavated at Moundville in 1905

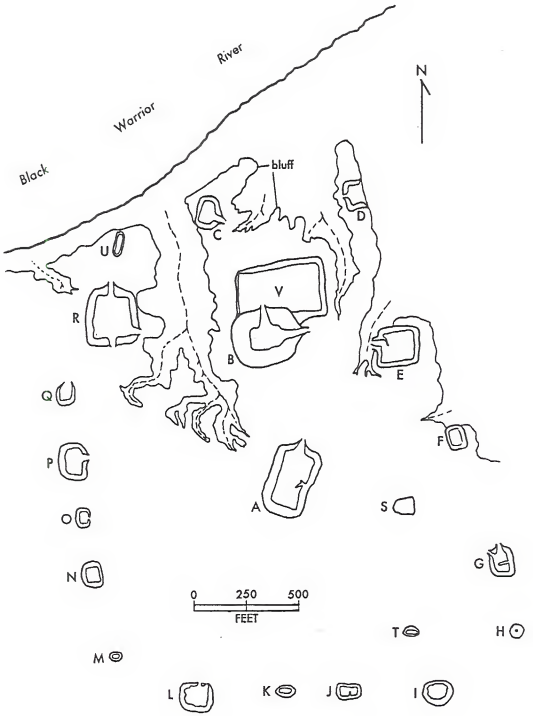


Figure 4.5. Moundville site map. After Moore (1905:129).

and 1906, unearthing 800 human burials. Various federal governmental agencies excavated from 1929 to 1941, and these efforts revealed over 2000 burials (Steponaitis 1983b:7). Hallmarks of the Moundville remains are pyramidal platform mounds, animal effigy ceramics, and shell-tempered pottery, some of which had a "black filmed" surface. A presumed shell bead workshop was detected from an area east of Mound E (Peebles and Kus 1977:442; Welch 1991:170), consisting of unworked shell and finished beads. An oft-cited publication on some of the archaeological correlates of chiefdoms was produced from archaeological materials at Moundville (Peebles and Kus 1977). This study suggested that Moundville was indeed a chiefdom-level society using the following criteria: 1) ascribed ranking of persons, 2) hierarchy of settlement types and sizes, 3) a high degree of local subsistence sufficiency, 4) an organization of productive activities that transcends the basic household group, and, 5) a society-wide buffering system against environmental perturbations (Peebles and Kus 1977:431-433).

Exotic goods recovered from the site include ceramics from the central Mississippi valley (Parkin Punctated, Bell Plain, and Nodena Red and White), sherds from Tennessee (Nashville Negative Painted), and from the Gulf coast (Pensacola Incised and Lake Jackson Decorated) (Steponaitis 1983b:221-225). Exotic lithics include; Dover chert from Tennessee, Ft. Payne chert from northern Alabama, Tallahatta quartzite from southern Alabama, and mica sheets from several hundred kilometers to the east and northeast (Welch 1991:161-162, 169). Mill Creek chert hoes from southwestern Illinois (Welch 1991:173), copper from the Great Lakes area, and galena from Missouri add to the inventory of foreign materials (Peebles and Kus 1977). Other exotic items are marine

shell artifacts, which Peebles and Kus (1977:443) state are "by far the most abundant non-local item found at Moundville." Brain and Phillips' (1996:298-299) study of shell gorgets revealed that two engraved shell cup fragments from Moundville show a close stylistic affinity with engravings from the Spiro site.

Spiro

The Spiro site (34Lf40) is located in Leflore County, eastern Oklahoma, on the south bank of the Arkansas River, about 45 kilometers downstream of the confluence with the Canadian River. It consists of a series of burial mounds, known as the Craig mound, and a series of habitation mounds (Brown 1996) (Figure 4.6). The site dates from 1000 to 1450 A.D., with the burials from the Great Mortuary in the Craig mound dating to 1400 A.D. (Brown 1996:153-161). The Great Mortuary is the central feature of Craig mound, and is a mounded charnel house from which most of the grave goods were obtained. Other burials contributed to the sample. A total of 377 individual burials were recovered (Brown 1996:216).

The excavation history at Spiro is among the best well-known in North America. In 1933, a group of men began legally looting the Craig mound for its salable riches. They reportedly unearthed artifacts such as copper axes, copper needles, pearl beads, stone effigy pipes, textiles, wooden artifacts, quartz crystals, about 453.6 kilograms (1,000 pounds) of galena, engraved and unengraved sinistral whelk shell cups, and shell beads (Hamilton 1952). This commercial venture continued until November 1935. A joint excavation by the federal Works Projects Administration (WPA) and the University of Oklahoma was performed from 1936 to 1941, under the direction of Forrest E.

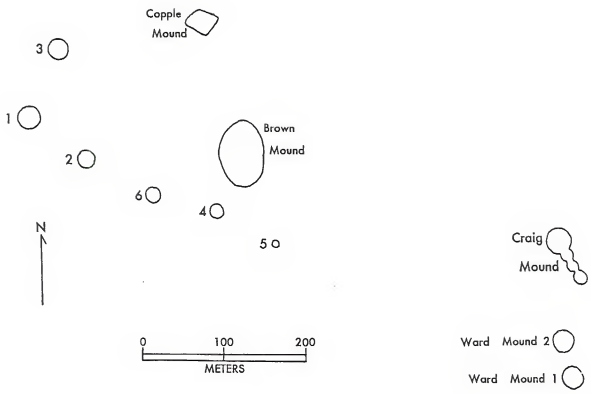


Figure 4.6. Spiro site map. After Brown (1996:15).

Clements (Orr 1946:228). However, a detailed account of these scientific excavations awaited publication by James A. Brown in 1996.

Numerous non-local materials were excavated from Spiro. Exotic lithics include: Mill Creek chert from southwestern Illinois; marble from the southern Appalachians in eastern Tennessee and northwest Georgia; "greenstone" (chlorite schist) and phyllite from the southern Appalachians (in northern Georgia?); copper from either the Lake Superior region or from the southern Appalachians; galena from the Potosi formation near Cahokia; mica from western North Carolina; Burlington chert from Missouri that had been fashioned into a Cahokia Notched point, Dover chert from either the Cahokia area or Tennessee; Kaolin chert from southern Illinois; and Alibates dolomite from the panhandle of Texas; Smoky Hill jasper from northern Kansas or southern Nebraska (Brown 1996:639-649; Phillips and Brown 1978:19). Ceramics that indicate connections with a wide region of the southeast are: Smithport Plain from the Arkansas River valley in Louisiana and Arkansas; Coles Creek Polished Plain from southwestern Arkansas; Pennington Punctate-Incised from the Mississippi valley area of southern Arkansas; Undesignated Irregular Zigzag from southern Mississippi; Powell Plain from the American Bottom; Parkin Punctated from the central Mississippi valley; Hiwassee Island Red-on-Buff from western Tennessee; and Nashville Negative Painted from central Tennessee (Brown 1996).

Shell engraving stylistic affiliations with other areas have also been studied. The Braden shell engraving style at Spiro shows a connection with ceramic incision styles from Cahokia and the Mississippi Valley region (Brown 1989). Another assertion is that

an engraved shell gorget found at Spiro is intrusive from the Etowah area (Brown 1989:187; Phillips and Brown 1978:126-127). Phillips and Brown (1978:166) suggested a Huastecan connection with the Spiro site based on motifs, however James Brown (1996:32) has recently commented that "it is highly unlikely that Spiro was part of a bridgehead of any importance to the Southwest." Brown (1996:20) notes a decline in theories of Mesoamerican influence on Spiro art styles.

The famous Craig mound at Spiro had most of the burials and exotic artifacts found at the site. The main cone-shaped mound was about 10 meters (33 feet) in height. Three other mounds were built to the southeast, 6.4, 6.4, and 1.4 meters high, consecutively (Brown 1996:53). James Brown (1996:65) believes part of the Craig mound consisted of "the remnants of a berm surrounding a central roofed structure." This structure afforded the excellent preservation of some textiles, wood, and other fragile artifacts. All of the burials in Craig mound date to the Spiro phase, 1000 to 1450 A.D. (Brown 1996:161). Excavations from the Craig mound were designated by the WPA as either LfCrI or LfCrII (Leflore County, Craig mound), and only the main mound was excavated by the WPA crew (Brown 1996:54). Burials were numbered consecutively, B1, B2, etc. Artifacts not directly associated with burials were designated consecutively, A1, A2, etc. (Brown 1996:60). A "dump" east of the mound consisting of the spoils of the excavations yielded some artifacts, which were numbered D1, D2, etc. The matrix was not screened.

Materials and Methods

Materials

Collections from the four sites included in the samples I studied are curated at institutions throughout the eastern United States. Positive identifications of the marine shell species used for artifact manufacture usually cannot be made from an illustration: additionally, most of these shell artifacts are not illustrated. It was therefore necessary to travel to various institutions to build a database of the artifacts and the marine shell species from which they were made. I included as many marine shell artifacts as possible from each of the four sites. The institutions I visited are listed in the legend of Appendix 2.

Methods

Information for each specimen was recorded on data sheets (see Figure 4.7). A specimen that could not be identified at least as sinistral or dextral was not included. Disk beads made from the outer whorl of a gastropod shell were not included, since no taxonomic identification is possible (at this time) for these artifacts. The following data were recorded: type of artifact (e.g., cup, bead, bead blank, pendant, gorget, pin, debitage, and whole shell), catalog number, the shell taxon from which it was made, whether it was from a sinistral or dextral shell (especially for columella beads), length, the apex angle (when present, solely for species determination of sinistral whelk shells), whether the artifact was engraved, and whether it was associated with a burial. An attempt was made to collect information on the age and sex of the individuals associated with shell artifacts, but this information is usually not available. Any pertinent

observations were also recorded in the "comments" section. All measurements were in millimeters. The data was input into a relational computer database (Microsoft Access).

Identification of some shell artifacts is easy. However, the more fragmentary remains of shell gorgets and masks make shell species identification difficult or impossible. Most masks and gorgets are sanded, sometimes obliterating the distinguishing characters necessary for identification. It is possible to identify some of them to either a dextral or sinistral shell, and if sinistral, whether it is from a gracile or robust shell.

Growth lines and shell curvature combine to allow identification of masks and gorgets made from dextral or sinistral shells. The artifact must be in a state of preservation that allows the detection of growth lines on the shell. Sometimes the direction of shell growth may be determined by examining the edge of the gorget. In whelk shells, growth lines converge toward the anterior of the shell, toward the anterior of the shell indicated by the siphonal canal (Figure 4.8). If growth lines are not visible, taxonomic identification is not possible. Secondly, a large enough section of the outer whorl of the shell must be present in order to detect shell curvature. Curvature is more flat at the lip and more pronounced towards the columella (Figure 4.8). Only specimens that were able to be identified using the above procedures were included in the sample I studied.

Shell beads made from gastropod shell columellas may also be sufficiently distinctive to determine whether they were made from dextral or sinistral shells. These

INSTITUTION:

SITE: SITE#:

CAT.#: ENGRAVED?:

PROVENIENCE: BURIAL?

MALE/FEMALE: ADULT/SUB/JUV:

ARTIFACT TYPE: LENGTH:

WIDTH: APEX ANGLE: SHOULDER ANGLE:

SINISTRAL/DEXTRAL: TAXON:

COMMENTS:

CAT.#: ENGRAVED?:

PROVENIENCE: BURIAL?

MALE/FEMALE: ADULT/SUB/JUV:

ARTIFACT TYPE: LENGTH:

WIDTH: APEX ANGLE: SHOULDER ANGLE:

SINISTRAL/DEXTRAL: TAXON:

COMMENTS:

Figure 4.7. Sample data sheet.

beads are referred to in the archaeological literature as barrel, tubular, massive, columella, cylindrical, etc. (see Chapter 2). Some columella beads may be identified to species based on their large sizes, either to horse conch or lightning whelk. Of course, this depends upon the presence of the columella groove. Only columella beads that have a columella groove clearly slanting to one direction or the other were included in my sample. In a few specimens, the groove was parallel to the hole, and these were not included. William H. Holmes (1883) used these same criteria to distinguish between dextral and sinistral columella beads (see Chapter 2 and Figure 2.1). "Bead blanks" were unfinished columella beads that have evidence of being worked; either cut or scored. Columellas without direct evidence of being worked were classified as debitage.

Categories were, by necessity, imposed upon some of the artifacts. It should be noted that some of the specimens are artifact fragments. Artifact type was sometimes inferred from context and sometimes was not known. Debitage fragments were generally broken pieces of shell having no particular shape. Shell "pins" may have been earrings, hairpins, or some kind of device to help fasten clothing. A pin consists of a columella that has been worked to a long, tapered, cylinder with a larger piece of the columella remaining intact to serve as a stopper. Pendants have been well-documented, therefore this category is more reliable; the same is true of cups. Some artifacts could not be classified according to function.

Results

The sample of marine shell artifacts is large with a total of 17,645 specimens examined: 8,318 from Cahokia, 1,257 from Etowah, 40 from Moundville, and 8,030

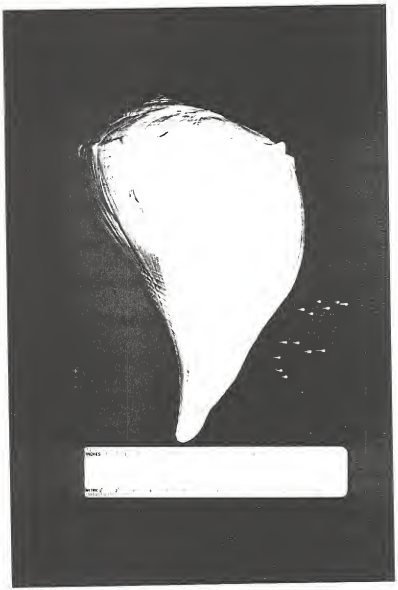


Figure 4.8. Outer whorl of sinistral whelk shell. Note growth lines used for identification.

from Spiro. A summary of the raw data on artifact types is presented in Table 4.1. Appendix 2 is the complete database.

It is immediately apparent that most of the specimens examined are beads. Most of these beads are made from small whole shells of two types; marginella and olive shells, and because they are usually not fragmented, they are much easier to identify. From Cahokia, 97% (7,735) of the 7,949 beads were from small whole shells of two types olive and marginella shells (of the genera *Oliva* and *Marginella*). Of the 1,209 beads from Etowah, 92% (1,118) were from either olive or marginella shells; 27% (six) of the 23 beads from Moundville were from the genus *Oliva*, and 87% (6,501) of the 7,451 beads from Spiro were from small whole shells representing the genera *Oliva*, *Olivella*, *Marginella*, and *Thais*.

The bead count represents skewed data. Thousands of columella and disk beads made from large marine gastropod shells have been recovered from these sites (see Chapter 2). Relatively few of these beads could be identified to any taxonomic level, and for that reason they were not included in my sample. This biased my sample toward small, whole shell beads, which are much easier to identify. Therefore, the bead count should not regarded as a comprehensive numeration of all bead types.

If we focus upon percentages of artifacts other than shell beads and bead blanks, a different picture emerges. Calculations of the percentages of different artifact types excluding shell bead totals are presented in Table 4.2. Shell cups and pendants comprise most of the sample, while other artifact types contribute only small percentages. Cups

TABLE 4.1
ARCHAEOLOGICAL SPECIMENS BY ARTIFACT TYPE

	Cahokia		Etowah		Moundville		Spiro	
Artifact Type	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
whole shell	17	0%	1	0%	2	5%	4	0%
cup	2	0%	8	1%	5	12.5%	374	5%
bead	7949	96%	1209	96%	23	57.5%	7451	93%
bead blank	28	0%						
debitage	314	4%	9	1%	3	7.5%	19	0%
gorget	2	0%	12	1%	5	12.5%	13	0%
pin			17	1%				
spoon			1	0%				
pendant	5	0%			2	5%	132	2%
unclassified	1	0%					37	0%
TOTAL	8318	100%	1257	100%	40	100%	8030	100%

TABLE 4.2
ARTIFACT TYPES EXCLUDING SHELL BEADS

	Cahokia		Etowah		Moundville		Spiro	
Artifact Type	Number	Percent	Number	Percent	Number	Percent	Number	Percent
whole shell	17	5	1	2	2	12	4	1
cup	2	1	8	17	5	29	374	65
debitage	314	92	9	19	3	18	19	3
gorget	2	1	12	25	5	29	13	2
pin			17	35				
spoon			1	2				
pendant	5	1			2	12	132	23
unclassified	1	0					37	6
TOTAL	341	100	48	100	17	100	579	100

TABLE 4.3
NUMBER OF ARTIFACTS BY SPECIES

Taxon	Cahokia		Etowah		Moundville		Spiro		Total	
Gastropods	#	%	#	%	#	%	#	%	#	%
Busycon sinistrum	316	4	79	6	29	72.5	1249	16	1673	10
Busycon cf. *sinistrum*	41	0	5	0	1	2.5		1	47	0
Busycon spp.							1	0	1	0
Busycotypus spiratus	8	0							8	0
Busycotypus cf. *spiratus*	1	0							1	0
Busycon cf. *carica*			17	1					17	0
cf. *Busycon carica*			2	0					2	0
Fasciolaria tulipa	1	0					1	0	2	0
Fasciolaria spp.	2	0			1	2.5			3	0
Pleuroploca gigantea	10	0	6	0	1	2.5	71	1	88	1
cf. *Pleuroploca gigantea*	1	0	1	0					2	0
Fasciolariidae							1	0	1	0
Strombus alatus	3	0							3	0
Strombus cf. costatus	1	0							1	0
Littorina irrorata	1	0							1	0
Oliva spp.	126	2	1	0	6	15	3	0	136	1
Oliva cf. *litterata*	1	0							1	0
Oliva cf. *sayana*	11	0					1	0	12	0
Olivella biplicata							33	0	33	0
Olivella spp.							6051	75	6051	34
Marginella cf. *apicina*	82	1							82	0
Marginella spp.	7517	90	1117	89			400	5	9034	51
Thais haemostoma	2	0							2	0
cf. *Thais*							14	0	14	0
Conus cf. *spurius*	2	0							2	0
Cassis madagascariensis							6	0	6	0
Cassis spp.	1	0					7	0	8	0
Haliotis cracherodii							1	0	1	0
Phyllonotus pomum							2	0	2	0
Phalium cf. *granulatum*	1	0							1	0
Unclassified - Beads	188	2	29	2	2	5	184	2	403	2
Bivalves										
Mercenaria spp.	1	0							1	0
Dinocardium robustum							2	0	2	0
Crassostrea virginica							2	0	2	0
Anadara transversa							1	0	1	0
Macrocallista nimbosa	1	0							1	0
TOTAL	**8318**		**1257**		**40**		**8030**		**17645**	

TABLE 4.4
ARTIFACTS BY SPECIES
EXCLUDING OLIVE AND MARGINELLA BEADS

Taxon	Cahokia		Etowah		Moundville		Spiro		Total	
Gastropods	#	%	#	%	#	%	#	%	#	%
Busycon sinistrum	316	54	79	57	29	85	1249	81	1673	73
Busycon cf. *sinistrum*	41	7	5	4	1	3			47	2
Busycon spp.							1	0	1	0
Busycotypus spiratus	8	1							8	0
Busycotypus cf. *spiratus*	1	0							1	0
Busycon cf. *carica*			17	12					17	1
cf. *Busycon carica*			2	1					2	0
Fasciolaria tulipa	1	0					1	0	2	0
Fasciolaria spp.	2	0			1	3			3	0
Pleuroploca gigantea	10	2	6	4	1	3	71	5	88	4
cf. *Pleuroploca gigantea*	1	0	1	1					2	0
Fasciolariidae							1	0	1	0
Strombus alatus	3	1							3	0
Strombus cf. *costatus*	1	0							1	0
Littorina irrorata	1	0							1	0
Thais haemostoma	2	0							2	0
cf. *Thais*							14	1	14	1
Conus cf. *spurius*	2	0							2	0
Cassis madagascariensis							6	0	6	0
Cassis spp.	1	0					7	1	8	0
Haliotis cracherodii							1	0	1	0
Phyllonotus pomum							2	0	2	0
Phalium cf. *granulatum*	1	0							1	0
Unclassified - Beads	188	32	29	21	2	6	184	12	403	18
Bivalves										
Mercenaria spp.	1	0							1	0
Dinocardium robustum							2	0	2	0
Crassostrea virginica							2	0	2	0
Anadara transversa							1	0	1	0
Macrocallista nimbosa	1	0							1	0
TOTAL	581		139		34		1542		2296	

TABLE 4.5
RATIOS OF DEXTRAL AND SINISTRAL COLUMELLA SHELL BEADS

	Cahokia	%	Etowah	%	Moundville	%	Spiro	%	Total	%
Sinistral	200	93	46	51	16	94	877	92	1377	88
Dextral	14	7	45	49	1	6	73	8	195	12
TOTAL	214		91		17		950		1572	

TABLE 4.6
SINISTRAL WHELK APEX ANGLES

Site	Sample Size	Range Low	Range High	Average	Mode	Standard Deviation
Cahokia	63	85	125	111	115	9.22
Etowah	3	105	125	117		10.41
Moundville	2	100	125	113		17.68
Spiro	181	94	140	120	120	7.93

were more abundant at Spiro, while very uncommon at Cahokia. Gorgets were more frequent in collections from Etowah and Moundville than at either Spiro or Cahokia.

Species Used in Artifact Manufacture

As with percentages of artifact types, percentages of species used in artifact manufacture are biased toward small, whole shell beads (see above), such as dwarf olive and especially marginella shells (Table 4.3). Again, this is a result of method: small whole shell beads are easily identifiable, while disk beads and most columella beads were not included in my sample because the shells from which they were made cannot be identified. If we remove this bias from the sample by calculating percentages without olive and marginella beads, lightning whelk specimens become most common (Table 4.4). Lightning whelk and horse conch now contribute 73% and 4%, respectively, to the specimen count. Unclassified columella beads contribute most of the rest (18%), and will be discussed below.

Columella Beads

One of the goals is to gather data on sinistral versus dextral columella beads using the method described above. Only about one-third of the columella beads I encountered had columella grooves that allowed designation of sinistral or dextral shell. However a large enough sample could be identified (n=1,572), and it can be relied upon as a valid subsample of columella beads (Table 4.5). Most (88%) columella beads from all four sites were made from sinistral shells, and the remaining 12% were made from dextral shells. The columella beads found at Cahokia, Moundville, and Spiro were far more

abundant (92-94%) than dextral columella shell beads. The columella beads at Etowah were fairly evenly divided between sinistral (51%) and dextral (49%) shells.

Columella bead blanks were only found in collections from Cahokia. Twenty-eight columella bead blanks were examined, and all were from sinistral whelk shells. Some of them had clear evidence of being worked, either cut, scored, or burned. None had drill-holes. Nine bead blanks were burned, while 19 were not burned. I found remains of a columella bead reduction sequence, starting with the unworked columella (Figures 4.9 and 4.10) and ending with a finished bead.

Burned Specimens

Many of the shell specimens, particularly those from Cahokia, were burned. A total of 157 specimens including beads, bead blanks, and debitage fragments from Cahokia were burned. The majority of these (125) were whole shell beads made from olive shells (*Oliva* spp.), which had burned portions. The remaining 32 fragments were from sinistral whelk shells, of which 88% (28) were burned columellas, 9% (3) were inner whorl fragments, and 3% (1) was an apex fragment. The large percentage of burned columellas and inner whorls at Cahokia suggests a shell working technique that will be discussed below. Spiro had three burned specimens, consisting of two burned sinistral columella beads, and one debitage fragment of a sinistral whelk shell (A6-13). The debitage fragment was sanded or ground on the outer whorl, and had an intact apex, spire, columella, and inner and outer whorls.

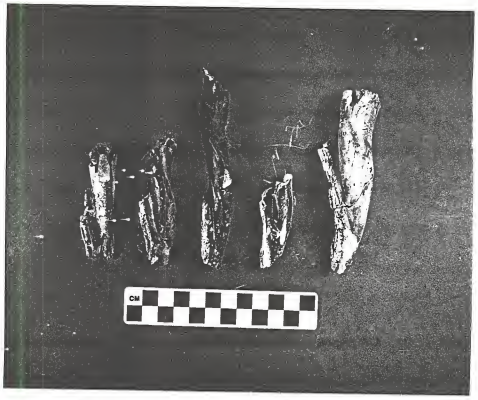


Figure 4.9. Cahokia columella bead blanks from Ramey Field (ISM #1958-91).

Figure 4.10. Cahokia, finished beads from Mound 72.

Apex Angles

In an effort to differentiate sinistral whelk shell species, the angle of the apex was recorded on all sinistral whelk artifacts possible. The apex angle (in degrees) is one of the defining characteristics between lightning whelks and prickly whelks. Table 4.6 summarizes apex angle data from the four sites. Unfortunately, Etowah and Moundville both had very small sample sizes (three and two, respectively), but Cahokia and Spiro had enough to comprise adequate samples. The average apex angle from sinistral *Busycon* artifacts from Cahokia is 111°, and 120° from Spiro. Lightning whelks have apex angles of about 105°, while prickly whelks have apex angles of about 90° (see Chapter 3).

Engraved Artifacts

Only cups, debitage fragments, pendants, and gorgets were engraved. The great majority are from sinistral whelk shell artifacts. Only one artifact from Cahokia (made of a sinistral lightning whelk shell) was engraved: a gorget from Ramey Field with a cross design. Twelve engraved gorgets were included in my sample from Etowah and all are from sinistral shells; eleven from lightning whelk shells, and one probably being made from a lightning whelk shell. Seven engraved fragments were from Moundville and included four cups and three gorgets, all made from lightning whelk shells.

The 144 engraved specimens from Spiro included 128 cups, two debitage fragments, twelve gorgets, one pendant, and one artifact of unknown type. Ninety-seven percent (140) of engraved specimens from Spiro were from lightning whelk shells. One gorget made from a horse conch (A448746) was engraved on both concave and convex

sides of the outer whorl. A debitage fragment (18/9080) consisting of the lip of a helmet shell (*Cassis madagascariensis*) was engraved in a scalloping pattern on the edge of the lip. Two cup fragments made from horse conch shells were engraved (A423288 and A26-60).

Experimental Archaeology

In an attempt to understand better the methods of making a shell cup without using modern high-speed electric-driven metal tools, I made four shells cups. I purchased lightning whelk shells that presumably came from the Florida west coast. The first one I made was from a small shell about 18 cm long. The second was from a slightly larger shell about 22 cm long, but very gracile and thin-shelled. The third was from a very large and gracile shell about 37 cm long. The last was from a shell about 26 cm long. Bowing to modern tools, I used a small ball-peen hammer to remove unwanted portions of the outer and inner whorls. This was a substitute for the lithic hammers that were available to Mississippian peoples.

Removal of the outer and inner whorls was relatively easy. I removed the entire columella from all but the last specimen mentioned above. However, after the whorls were taken out, removal of the columella required more precise hammering. On the gracile shell of 22 cm, I broke the apex out while trying to remove the columella in the spire area. With the smaller specimens, I was able to remove all of the columella by hammering. On the very large shell I found I could not remove the columella by hammering, except by breaking the outer whorl, thus ruining the cup.

I spoke with a crafts instructor (Ray Ferguson, personal communication) at the University of Florida, and he suggested that I try to use fire to help make the shell more friable so that it could be more easily worked. Shell that has been exposed to heat is more brittle and chalky, since the organic constituents have been burned away. At first I used small sticks taken from a fire, but that method did not work. What was needed was an intense focused flame. I followed the suggestion to use a blow torch, though I was hesitant at first since Mississippian peoples did not have blow torches. However, Mississippians did have means of using directed fire, such as pitch pine or small torches. The blow torch worked well, as long as the heat was not too intense. If the heat was kept focused for too long, the shell started popping and cracking, threatening to explode. I kept moving the small flame evenly over the area that I wanted to break. The fire worked, after about an hour of heating the desired area on the shell. Using the ball-peen hammer, I was now able to hammer the burned columella off the rest of the shell without breaking the outer whorl into pieces. The resulting burned columella is pictured in Figure 4.11.

Discussion and Conclusions

Connections among the four sites are indicated not only by the presence of similar artistic motifs, which have been so thoroughly studied (Brain and Phillips 1996; Emerson 1989; Waring and Holder 1945; Williams and Goggin 1956), but by exotic materials and artifacts. The uneven distribution of natural resources among these four sites predisposed them to engage in some kind of trade or exchange, but not the long-distance

Figure 4.11. Experimental archaeological burned columella.

trade that apparently existed. Certain substances were desirable for their utilitarian attributes, such as Mill Creek chert from southwestern Illinois. Other materials were sought for purely ideological reasons, such as copper, which had more value as ceremonial objects rather than utilitarian items. Marine shells were used to make ceremonial and/or status items. Ethnographic and ethnohistoric sources clearly place marine shell artifacts in the ceremonial category.

Shell Beads

A surprising number of small whole shell beads (from olive and marginella shells) were found in the collections. Large quantities of this type of bead have not been widely reported in the archaeological literature, and the large percentages of them in my sample do not take into account the large numbers of disk and columella beads that were also recovered. Many archaeologists presume that most of shell disk and columella beads were made from sinistral whelk shells, and this underscores the bias in my sample toward olive and marginella beads. Additionally, small snail shells are easily gathered, sometimes by the hundreds (Kurt Auffenburg, personal communication), in the areas where they occur. They represent less of an investment in time and energy, since they are more easily transported, and much easier to make into beads.

Most columella beads (88%) were made from sinistral whelk shells (probably lightning whelk shells), confirming previous assumptions by archaeologists. If we examine artifact percentages without shell beads as presented in Table 4.2, we see an emphasis on bead-making debitage at Cahokia, from clear bead-producing areas such as Ramey Field, and mounds 33 and 34 (all east of Monks mound). Production of shell

beads was emphasized at Cahokia, almost to the exclusion of cups, gorgets and other shell artifacts. This may shed light on the debate concerning specialized production of shell beads at Cahokia. If shell beads at Cahokia were sought after so intensely, then some type of control may have existed over the creation of such a desirable product.

Shell Working Technology

At Cahokia, the large proportion of burned columellas indicates that Cahokians occasionally used fire to help them separate the columella from the rest of the shell. Garcilaso de la Vega (1988:330 [1605]) mentioned in his account of DeSoto's expedition that pearls were pierced using hot copper needles, supporting that heat was a known method of working with shell-like material. Another early record (among the Natchez) from Dumont de Montigny (in Swanton 1946:486), stated that shell gorgets were pierced by means of fire. My own attempts to remove a columella from a large lightning whelk shell supports the importance of heat in shell-working technology. The resulting burned columella from my experiment looks remarkably similar to the archaeological specimens.

Shell cups from Spiro had clear evidence of having the columella cut out, probably by a chert implement. A photograph of a shell cup from Spiro shows clear "saw" marks where the columella used to be (Figure 4.12). This contrasts with the burned columella method probably employed at Cahokia. The choice of technique, either burning or cutting, may depend on the desired outcome, either production of beads or cups. Differences in shell working technology could have been the result of local traditions.

Pacific Coast Shells at Spiro

An important result of the study of marine shell from the Spiro site is the presence of beads made from dwarf olive shells, and one unmodified black abalone shell. Although all of the marine shell artifacts are from distant coastal areas, these artifacts are the first from Spiro to be identified as originating from the Pacific coast. Finding Pacific coast shells at Spiro supports the idea of Frank F. Schambach (1993) that the people who lived at Spiro conducted long-distance trade as their primary method of economic subsistence.

Kurt Auffenberg, Collections Manager of the Malacology Range at the Florida Museum of Natural History, made the identifications. Identification of the dwarf olive shells from Spiro (*Olivella biplicata,* curated at the Oklahoma Museum of Natural History, Lf40/953c) was based on the large size of the shells, in addition to the pink and purple coloration that is still visible (Figure 4.13). The shell attains a length of 3.2cm (1.25 inches). This species is found only in the Pacific Ocean, from Vancouver Island, British Columbia, to Baja, California. It lives on sand substrates from low tide to 46 meters deep (Rehder 1996:585). This is the same species that was targeted by tribes from southern California for bead artifact manufacture from 900 to 1600 A.D. (Arnold and Munns 1994). On the Channel Islands off the California coast, whole shell beads, as well as disk beads made from the outer whorl, were made from these dwarf olive shells.

Most olive shells of the genus *Olivella* were not identified to the species level, since specific identifications of this genus are very difficult. The majority of *Olivella* shell beads at Mississippian sites have been assumed to originate from Atlantic or Gulf of

Figure 4.12. Sinistral shell cup from Spiro (Gilcrease #9025.1723, LfCrI1). Note the columella was cut out.

Mexico waters. Perhaps these beads should be re-examined to better determine the coast of origin.

The black abalone shell from Spiro (*Haliotis cracherodii*, A448776) also came from the Pacific coast. This species ranges from Coos Bay, Oregon to Baja, California, and inhabits shallow rocky shores from the intertidal zone to 6 meters deep (Rehder 1996:343). It is the most common abalone on the Pacific coast.

Dwarf olive beads and abalone shells were widely exchanged in the Southwest. These may have been valued due to their purplish/pink color and shine. Pueblo people associated these shells with war, and on rare occasions made the long trip to the Pacific to collect shells themselves (Safer and Gill 1982). Pre-European trade routes were known to have existed that would have allowed transportation of Pacific coast shells to New Mexico (Brand 1938; Tanner 1989) and then to the Spiro site. Figure 4.14 is a map loosely based on Brand (1938:8) showing how Pacific shells might have reached the Spiro site. Brand (1938) discussed possible trade routes for Pacific marine shells, especially *Olivella biplicata* and *Haliotis* spp., using data from 132 archaeological sites. The most important procurement area for *Olivella biplicata* beads on the California coast was the Santa Barbara Channel Islands (Ann Munns, personal communication), and it is probable that the dwarf olive shells originated there.

Potable water is especially important in the dry Southwest, and it is likely that travelers sought routes with reliable water sources. The Canadian River is saline for most of the year (Geraghty et al. 1973), but is not saline during the spring, when snow is melting (Moore 1987:154). The term "saline" is defined as "dissolved solids, which may

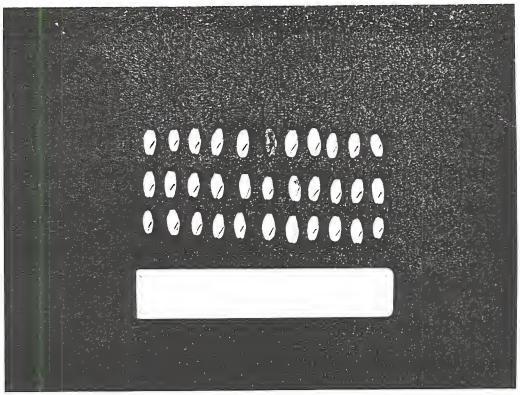
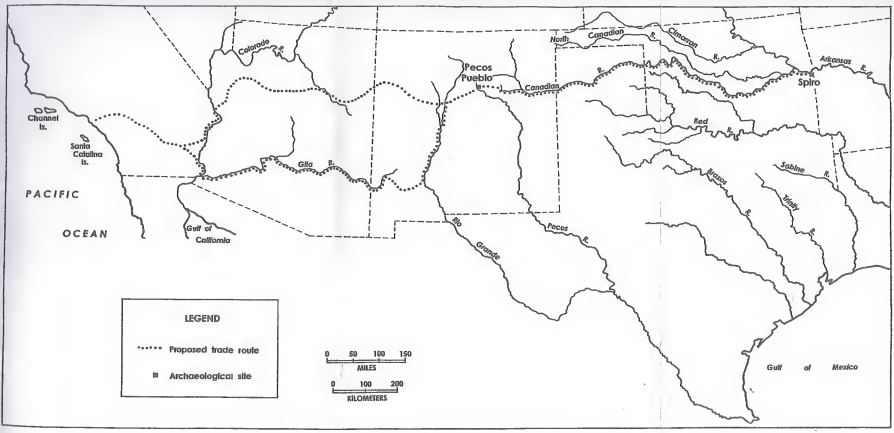


Figure 4.13. *Olivella biplicata* shell beads from the Spiro site (OMNH #Lf40/953c).

Figure 4.14. Proposed trade routes from the Pacific Ocean to the Spiro site.


Colorado R.
Pecos Pueblo
North Canadian R.
Canadian R.
Cimarron R.
Arkansas R.
Spiro
Red R.
Sabine R.
Neches R.
Trinity R.
Channel Is.
Santa Catalina Is.
PACIFIC OCEAN
Gila R.
Gulf of California
Rio Grande
Pecos R.
Gulf of Mexico
LEGEND
Proposed trade route
Archaeological site
0 50 100 150
MILES
0 100 200
KILOMETERS

be sodium chloride, limestone, or gypsum." To qualify as saline, the water must contain 1,000 parts per million (ppm) of dissolved solids. The Gila River is saline in its upper reaches (Geraghty et al. 1973). Some people in the Southwest drink water with up to 2,500 ppm, because they have become accustomed to it (Geraghty et al. 1973). It is likely that the dwarf olive and abalone shells found at Spiro traveled along the South Canadian River, which flows nearly due east from the pueblos in northern New Mexico.

Dwarf olive and abalone shells were found at the Pecos Pueblo site, near what is now Santa Fe, New Mexico (Kidder 1958). One of the burials at Pecos Pueblo had at least 1,000 *Olivella* beads associated with it (Kidder 1958:203). Tanner (1989:8) shows that one of the major trading centers was Santa Fe, reached from the east by either the Red River or the Canadian River. The Santa Fe trading post had abalone shells coming from the Pacific coast as late as 1776 (Colton 1941:308). Santa Fe was reached by various routes from the Pacific coast (Brand 1938; Colton 1941). The Spiro site has already been suggested as a trading post between tribes to the west and east (Bruseth et al. 1995). Evidence for trade in Pacific coast items is scant, and consists of the dwarf olive and abalone shells presented here, consequently no large-scale movement of goods from the Pacific to the Spiro site is indicated. Spiro is also the furthest west of the four sites studied, so it may have been at the fringes of movement of items from the Pacific coast.

Other Shell Artifacts

Most specimens (other than olive and marginella beads) were made from sinistral whelk shells, usually lightning whelk shells (Table 4.4). Sinistral whelk artifacts

comprised at least 75% of the total sample, not counting columella beads that are made from mostly sinistral shell. My sample included 10 cup fragments made from horse conch shells, one from a helmet shell, and one from an apple murex shell; all of these from Spiro.

Data from apex angles of archaeological specimens also support that most shell artifacts (excluding small whole shell beads) are from made from lightning whelks rather than prickly whelks. Lightning whelks have apex angles of about 105°, while prickly whelks have apex angles of about 90° (see Chapter 3). A few specimens from both Cahokia and Spiro had apex angles that fall into the range of those from prickly whelks (90°). It should be kept in mind that apex angles of modern lightning whelks and prickly whelks overlap in range. The snow whelk is not a likely candidate for shell artifact manufacture, since so few individuals of this species are known to exist: even these few specimens may not constitute a species distinct from lightning whelk (see Chapter 3).

The Mississippians unequivocally focused their engraving skills on lightning whelk shells. Ninety-eight percent of the 164 engraved shell artifacts in my sample, mostly cups and gorgets, were made from lightning whelk shells or probable lightning whelk shells.

Most columella beads from all four sites are from sinistral shells, probably from lightning whelk shells, since whole shells were likely transported to the site for artifact manufacture. The amount of shell working debitage present at Cahokia, and the occurrence of a shell working area at Moundville support that whole shells were transported. At Cahokia, shell debitage consisting of broken pieces of all shell parts were

found, including spire, apex, columella, and outer whorl (Appendix 2). Since finished artifacts at Cahokia consisted largely of beads, we can assume that whole shells were brought to Cahokia in order to make beads.

Implications for Archaeologists

These data raise a number of questions: Were lightning whelk shells easier to obtain? Did lightning whelks have some inherent characteristic that made them desirable for artifact manufacture, such as color or large size? Were lightning whelk shells easier to engrave or work? Why were lightning whelks chosen rather than prickly whelks?

That lightning whelks (*Busycon sinistrum*) were used at these inland archaeological sites is an important consideration in attempting to determine the coast of origin of sinistral shells. Since lightning whelks primarily occur in the eastern Gulf of Mexico, and prickly whelks occur in the western Gulf of Mexico, the shells almost certainly came from what is now coastal west Florida. Lightning whelks do not occur in any numbers from any other area in the Atlantic or Gulf of México (see Chapter 3). These shells were transported to the four target archaeological sites. This has implications in understanding the economy of western Florida, and brings to light new areas for further research. For example, did inland people travel to the coast to procure the shells for themselves? It seems more likely that some sort of barter system was used, due to the fact that knowledge of the local coastal environment is required to obtain shells. If a barter system was used, what did coastal people get in return for the shells?

The basic question is why were lightning whelk shells the primary shell used for engraved cup and gorget manufacture, items that probably functioned in a ceremonial

and/or status capacity? In Chapter 3 I discussed shell availability, showing that the largest, most available shell is the horse conch. Color is apparently not an factor, since all whelk shells are white underneath the periostracum that is removed when the shell is sanded, polished, or engraved. Whether sinistral whelk shells are easier to engrave than other shells is not known; however, I suspect they are not. Dextral knobbed whelk shells have almost the same characteristics as do sinistral lightning whelk shells, except they do not get as large. Dextral whelk shells have never been used, to my knowledge, as a material for engraved artifacts. Large horse conchs were probably easier to obtain than large lightning whelks. The one outstanding quality of sinistral lightning whelk shells is that they are sinistral. Evidence for possible ideological reasons behind this choice of lightning whelk shells for ceremonial artifacts is discussed further in Chapter 6. The next chapter concerns motif frequencies on different artistic media.

CHAPTER 5
MOTIF FREQUENCIES

To investigate the suggestion that marine shells were indeed thought of as a special material, I analyzed frequencies of motifs on different engraved materials: shell, copper, stone, and ceramics. I did not analyze motifs themselves for meaning, since this has been done previously (Emerson 1989; Howard 1968; Smith and Smith 1989; Strong 1989; Waring and Holder 1945; Williams and Goggin 1956). For descriptions and maps of the four sites, please refer to Chapter 4. Since one of the foci of this study is spirals, the two kinds of spirals were categorized separately, both as a pure motif, and as a coiled snake, as described in Muller (1966) as Citico, Saltville, and Lick Creek gorget styles. Muller described engraving styles of shell gorgets that depicted coiled snakes.

Methods

For each of the four sites, designs were cross-checked, when possible, with all known published illustrations. The publications used are given below for each site, and the particular medium engraved upon. Fragmentary remains were considered as if they were one piece of work; e.g., a sherd was counted as if it were a whole pot. If a piece depicted repeated instances of one motif, only one of that type of motif was counted. Additionally, if a piece exhibited more than one motif (which was often the case) all of

the motifs were counted for that piece, since to count only one of those motifs would bias against the others.

The motifs used (see Table 5.1) were published by Waring and Holder (1945) and Kneberg (1959). These are considered to be standard motifs in late prehistoric Southeastern archaeology. The animal motifs are some of the most common ones appearing on Southeastern media. Following is a description of the samples for each of the four sites.

Cahokia

Few engraved pieces of marine shell have been excavated from Cahokia, and only one has been found with design elements that are complete enough to be included in my sample (Brain and Phillips 1996:266). This gorget was made from a sinistral whelk shell, and was included in my Cahokia sample (see Appendix 2, ITARP specimen).

Additionally, very few pieces of copper have been found, none of which can be included in my sample since they have no engraved or embossed designs.

Only a small portion of the excavated pottery from Cahokia and the surrounding area were incised (Griffith 1981; Wilson 1996). However, a certain pottery type was suggested to have been one of the ways the elites at Cahokia attained/maintained their status (Pauketat and Emerson 1991; Wilson 1996). This type has been termed "Ramey Incised," and consists of "semi-globular vessels with pronounced shoulders, in-slanted rims, and constricted mouths" (Pauketat and Emerson 1991:922). Presumably, Ramey Incised was manufactured at, or very near, Cahokia and traded to areas surrounding Cahokia. Since it is presumed that this ware was made at Cahokia, Ramey Incised

ceramics are included in my sample from Cahokia. The sherds illustrated in Griffith (1981), and Wilson (1996) were the basis for my ceramic sample from Cahokia.

Etowah

The publications from which my sample of stone objects from Etowah was drawn is from both Moorehead (1932), and Brain and Phillips (1996). Stones included in my sample consisted of palettes, pipes, or figurines, rather than bowls.

The ceramic sample from Etowah was obtained from Ashley (1932). Most of the designs are simple lines, curved lines, or zig-zags, and hence could not be categorized for this study.

Quite a few engraved copper plates have been found from Etowah, and my sample is drawn from Brain and Phillips (1996), who have done an excellent job of summarizing the excavation histories at a number of sites, including Etowah.

A number of engraved marine shell gorgets have been excavated from Etowah, twelve of which were included in my archaeological sample (Appendix 2). For the motif analysis, my sample from Etowah of engraved shell is illustrated in Brain and Phillips (1996), which depicts all of the known shell gorgets from archaeological sites east of the Mississippi.

Moundville

Samples from all the various media (stone, shell, ceramic, and copper) from the Moundville site were drawn from two sources: Moore (1996 [1905 and 1907]), and Brain and Phillips (1996). Each of these publications depicts artifacts not illustrated in the

other, and careful cross-checking was necessary to avoid duplication of motif frequencies.

Spiro

The largest amount of marine shell engravings are from the Spiro site in Oklahoma. Phillips and Brown (1978) amply illustrated these shell engravings, and my engraved shell sample from Spiro is drawn from their work.

A great amount of engraved or embossed copper was excavated from Spiro. My sample is drawn from Hamilton et al. (1974), who depicted much of the known Spiro copper. A few copper-covered stones were recovered and illustrated in Hamilton et al. (1974:183). These were categorized as copper, since the intended effect was to display the copper over the stone.

The sample of ceramic and stone motifs were drawn from exclusively from Brown (1996). A variety of types of stones was recovered, as well as a variety of ceramic tempers. No attempt was made to note the kind of temper used or type of stone engraved upon.

Results

The following discussion presents results of the motif frequency analysis. Please refer to Table 5.1 for motif frequencies on shell, Table 5.2 for ceramics, Table 5.3 for copper, and Table 5.4 for stone. These tables show the raw numbers and percentages at each site, by medium.

Cahokia

Sample sizes at Cahokia from all four engraved media are small. One marine shell gorget was excavated from Cahokia, and its design was a cross. No engraved copper was found, and two stone effigies, of human, and bird-human. Only ceramics had more than two engraved motifs, for which the sample size is 26 (Table 5.2). Four motif categories in ceramics had percentages larger than ten: circle, sinistral spiral, interlocked spiral, and human (23%, 23% 30% and 23%, respectively) .

Etowah

Etowah had adequate sample sizes of motifs in three media, shell (n=50), ceramics (n=61), and copper (n=46), but unfortunately, the sample size for stone was small, only eleven motifs. The most striking result is that 41% of the motifs on copper at Etowah contain the bi-lobed arrow. Other frequent motifs found on ceramics were the circle and the square, both occurring on 30% of the fragments.

Moundville

From Moundville, most motifs were found on ceramics (n=127). Of these, the most frequent motif was the circle (31%). Other fairly frequent motifs were the cross (12%), the bird (13%), and the human (9%). Cross and circle motifs were the most frequent on copper (33% and 48%, respectively). Circle motifs were extremely frequent on stone, occurring on 55% of engraved stone pieces.

Spiro

The Spiro materials had an adequate sample size from all four media categories, though both ceramics and stone had a total number motifs in the low 40's. Almost 30%

TABLE 5.1
MOTIF FREQUENCIES ON MARINE SHELL

	Cahokia		Etowah		Moundville		Spiro	
	#	%	#	%	#	%	#	%
Cross	1	100	7	14	3	25	64	11
Circle			7	14	3	25	76	13
Square			1	2			2	0
Sinistral Spiral							8	1
Dextral Spiral							13	2
Interlocked Spiral							1	0
Bi-Lobed Arrow							17	3
Forked Eye					1	8	64	11
Hand & Eye							9	2
Barred Oval					1	8	42	7
Open Eye							16	3
Sinistral Triskele								
Dextral Triskele			1	2				
BEINGS								
Spider			1	2			7	1
Bird			9	18	1	8	21	4
Human			5	10	3	25	164	29
Snake, Not Coiled							21	4
Snake, Sinistral			11	22			1	0
Snake, Dextral							2	0
Bird-Human			8	16			21	4
Antlered Snake							19	3
TOTALS	1	100	50	100	12	100	568	100

TABLE 5.2
MOTIF FREQUENCIES ON CERAMICS

	Cahokia		Etowah		Moundville		Spiro	
	#	%	#	%	#	%	#	%
Cross			6	10	15	12		
Circle	6	23	18	30	40	31	18	44
Square			18	30	2	2		
Sinistral Spiral	6	23	7	11	1	1	8	20
Dextral Spiral			1	2	2	2	15	37
Interlocked Spiral	8	31	2	3	6	5		
Bi-Lobed Arrow					3	2		
Forked Eye					8	6		
Hand & Eye					6	5		
Barred Oval					8	6		
Open Eye								
Sinistral Triskele								
Dextral Triskele								
BEINGS								
Spider								
Bird					16	13		
Human	6	23	9	15	12	9		
Snake, Not Coiled								
Snake, Sinistral								
Snake, Dextral								
Bird-Human								
Antlered Snake					8	6		
TOTALS	26	100	61	100	127	100	41	100

TABLE 5.3
MOTIF FREQUENCIES ON COPPER

	Cahokia		Etowah		Moundville		Spiro	
	#	%	#	%	#	%	#	%
Cross			4	9	11	33	7	5
Circle			6	13	16	48	19	15
Square							10	8
Sinistral Spiral							4	3
Dextral Spiral								
Interlocked Spiral								
Bi-Lobed Arrow			19	41	1	3	3	2
Forked Eye			3	7	1	3	26	20
Hand & Eye								
Barred Oval			2	4	2	6	12	9
Open Eye							1	1
Sinistral Triskele								
Dextral Triskele								
BEINGS								
Spider								
Bird			5	11			8	6
Human			3	7	2	6	37	28
Snake, Not Coiled								
Snake, Sinistral								
Snake, Dextral								
Bird-Human			4	9			3	2
Antlered Snake								
TOTALS	0		46	100	33	100	130	100

TABLE 5.4
MOTIF FREQUENCIES ON STONE

	Cahokia		Etowah		Moundville		Spiro	
	#	%	#	%	#	%	#	%
Cross					1	3	10	23
Circle			4	36	18	55	16	37
Square			1	9	2	6	2	5
Sinistral Spiral								
Dextral Spiral							1	2
Interlocked Spiral								
Bi-Lobed Arrow					2	6		
Forked Eye					1	3		
Hand & Eye								
Barred Oval					1	3		
Open Eye								
Sinistral Triskele								
Dextral Triskele								
BEINGS								
Spider								
Bird					4	12	3	7
Human	1	50	6	55	3	9	11	26
Snake, Not Coiled								
Snake, Sinistral								
Snake, Dextral								
Bird-Human	1	50						
Antlered Snake					1	3		
TOTALS	2	100	11	100	33	100	43	100

of the engraved marine shell pieces included human motifs. Other fairly frequent motifs on shell were the cross (11%), circle (13%), and forked eye (11%). The circle was the most prevalent motif on Spiro ceramics, at 44%. Only two other motifs were present on ceramics: spirals. The dextral spiral (37%) was more frequent on ceramics than the sinistral spiral (20%).

On Spiro copper, the most frequently occurring motif was the human (28%). The forked eye (20%) and circle (15%) motifs were also common. The most frequent motif on stone was the circle (37%), while human (26%) and cross (23%) motifs were also recurrent.

Discussion and Conclusions

The circle is common on all four media, while depictions of humans are most frequent on marine shell and stone. The circle motif that was common on stone was a result of the great percentage of lines drawn along the edge of round, stone palettes. These were assumed to have been used to mix pigments since different colors have been found on them (see Moore 1996[1905]:104-105).

Many of the human motifs on stone were in the form of stone effigies (small statues), rather than engravings, except for the Spiro site where the greatest number of human depictions were found on shell. Humans were not found on engraved ceramics from the Spiro site, suggesting that humans were an appropriate subject for marine shell, but not for ceramics, at least from Spiro. On Spiro copper, humans were the most

frequent motif. This suggests that marine shell was akin to copper at Spiro. However human motifs on ceramics from the other three sites occurred regularly.

Dextral and sinistral spiral motifs were found in greater percentages on ceramics, but not in any of the other media. This generally holds true for each of the four sites, suggesting that spirals were acceptable motifs for ceramics, but not for the other media classes. As noted in the Methods section above, most of the designs on ceramics from all sites were of a simple geometric design, sometimes just straight or curved lines. It may be that the spiral is a variation of the curved line on ceramics.

The bi-lobed arrow occurred most frequently on Etowah copper, and contributed the overwhelming majority (41%) of copper motifs. This motif rarely occurred on any of the media at the other three sites.

Sinistral snake motifs were found frequently on Etowah shell, and none were of dextral snakes. These were mostly gorgets of the types studied by Jon Muller (1966). Snake gorgets have been found most commonly in the Tennessee and Coosa River drainages (Brain and Phillips 1996). All but 2% (6 of 260) of these gorgets from all sites are sinistral snakes (Brain and Phillips 1996). This motif seems to be uniform, and occurs only on shell. This suggests that shell was the only appropriate material for sinistral snake motifs. Spider motifs also occurred only on shell, however the frequencies were low. This suggests that shell was the only appropriate material for spider and coiled snake motifs.

The results of the analysis are mixed. While sinistral snakes and spiders occurred exclusively on marine shell, both sinistral and dextral spirals occurred on ceramics.

Copper was clearly an appropriate medium choice for bi-lobed arrow motifs at Etowah. Human statues were commonly made from stone, and some from ceramics, while humans were also frequent on marine shell at most sites, as well as copper at Spiro. A much larger sample size may help to bring out the differences in motif frequencies on various media.

CHAPTER 6
THEORY, SOUTHEASTERN ETHNOGRAPHY, AND IDEOLOGY OF SHELLS

Introduction

This chapter examines some of the issues surrounding the choice of shells in making non-utilitarian artifacts. Reasons for the indigenous world-wide use of particular shells are discussed, and the study of shells from archaeological sites is placed within the larger framework of anthropology. A structural archaeological approach is used, in combination with a materialistic stance. However, an alternate view is given hypothesizing that sinistral shells were simply easier to handle. Ethnohistoric and ethnographic data from indigenous Southeastern peoples are also presented.

The unique characteristic possessed by the majority of traded shell species found at Mississippian sites is the direction of coiling, which is sinistral. The particular spiral represented by sinistral lightning whelk shells is rare among shells. Only a few snail species world-wide are sinistral, and sinistral lightning whelks are the only large sinistral snails in the Atlantic Ocean or Gulf of Mexico, or Caribbean Sea.

I suggest that shells were symbols of spirals in Southeastern ideology. Spirals, as suggested from ethnographic and ethnohistoric accounts (presented below) were representations of sacred direction. Lynn Ceci (1989:66) suggests that "spiral-shape shells from the sea are tied to magic, myth, and ritual," particularly in what is now New

York state. The significance of spirals other areas of North America supports that spirals were also meaningful among Mississippians. Previous researchers have observed, among other connections, an association of spirals with sinistral whelk shell artifacts. These previously noted connections are analyzed below.

Information gleaned from ethnographic and ethnohistoric accounts (including circular dances) in the Southeast indicates that the spiral seen on sinistral whelk shells may represent the clockwise path of the sun (see below). If circular direction was an important component of Southeastern ideology, then we should see this concept manifested in other archaeological remains, in addition to shell artifacts.

Shell Artifacts World-Wide

The following discussion presents a general overview of shells used in prestige items from a world-wide perspective. It is not intended to present a detailed listing of each instance of exotic marine shells used for artifacts, but rather is designed to generate possible overarching reasons for the use of marine shells in prestige artifact manufacture.

Why do people sometimes treat sea shells as prestige items? A few notable examples of shells as objects of distinction give us a basis from which to address this topic. In the famous case-study of the "Kula" exchange, Bronislaw Malinowski (1984) described an exchange system among Trobriand islanders in Melanesia. In the "Kula ring," as it is commonly referred to among anthropologists, different types of shell artifacts were moved around a "ring" of islands in different circular directions. Necklaces strung with red beads made from shells of thorny oysters (*Spondylus* spp.)

moved clockwise around this ring, while white bracelets from cone shells (*Conus millepunctatus*) were transported in a counterclockwise direction. These shell necklaces and bracelets were prestige items, though they lacked sacred power (Weiner 1992:133). Malinowski believed the Kula evolved as a mechanism to facilitate trade of vital goods among these islands of fixed resources.

Thorny oyster (*Spondylus* spp.) shells were also gathered along the northwestern shore of South America and traded inland long before Europeans came to the Americas, as early as 2000 B.C. (Mester 1989:158). The shells of *Spondylus princeps* (the species most commonly found at archaeological sites) vary in color and can be red, yellow, white, purple, and orange, but are always one color per shell. Other shells were also used in this area: conch shells (*Strombus peruvianus*) were made into trumpets, and pearl oyster shells (*Pteria sterna* and *Pinctada mazatlantica*) were made into pendants (Mester 1989). Thorny oyster shells were fashioned into beads, and whole shells were offered to weather deities to ensure fertility (Davidson 1977:332; Mester 1989:157). They were used to confer status, and had religious and cosmological connotations.

Special attention should be paid to artifacts made from *Spondylus* shells, since their use is almost certain in places where they are easily obtained. They were used in Neolithic Greece (Halstead 1993), Melanesia, and South America (see above). Such a world-wide focus by humans on a particular genus of marine mollusk invites scrutiny by anthropologists. Thorny oyster shells of the genus *Spondylus* have coloration throughout the shell matrix, and not just in the periostracum as in most other shells. This makes thorny oyster shells ideal for bead manufacture wherever they can be obtained.

Other shells which have coloration throughout the shell were also used to make beads. Though thorny oysters do occur in the Gulf of Mexico and Caribbean Sea, they inhabit deep water, and are therefore inaccessible in shallow areas close to shore. A bivalve shell occurs in these waters that has coloration throughout, the jewel box (genus *Chama*). Jewel box shells were used to make beads in the Caribbean, especially in the Bahamas (Carlson 1993). Again we observe that where a shell that has coloration throughout can be obtained, it is used for bead-making.

Clam shells of the genus *Mercenaria* also may have a purple coloration in certain areas throughout the shell, especially along the margin of the shell and at the muscle attachment area (Abbott 1982:180). These shells were used in the Northeast to make shell beads, and the purple beads from these shells were widely traded. Once again, colored shell materials were used to make beads. It has been pointed out, however, that beads in the Northeast made from clam shells are not really *wampum* (Ceci 1989:63). True *wampum* beads were made from dextral whelk species of the genera *Busycon* and *Busycotypus*, but these have no color.

An exhibit at the American Museum of Natural History shows the diversity of shells used to make artifacts (Safer and Gill 1982). Many are not colored shells *per se*, but are shells that reflect light, like mother-of-pearl. These shells include abalones from the Northwestern U.S., green snails from the New Guinea highlands, and pearl oysters from Fiji. This supports that shell color is an important consideration in shell choice for artifact manufacture. Mary Helms (1992:187) also pointed out that luminosity is an

important quality evident in many artifacts, such as iridescent bird feathers, wet shells, burnished metal, and polished stone.

Some shells have shapes that lend themselves easily to artifact manufacture. These include cowry shells and cone shells. As mentioned above, cone shells were used to make arm bands in Melanesia. Cone shells are more or less hollow inside, rendering the shells much easier to work, since the inner whorls do not have to be removed. Cowry shells are widely used to make beads in New Guinea and Africa, especially among the Igbo, Yoruba, and the Bini (Abbott 1982:150, 177; Safer and Gill 1982:134-135). Cowry shells are also hollow inside, making it easier to make artifacts. Shell shape is an important factor in shell choice.

Two general reasons for shell usage in artifact-making have been discerned. They are: 1) color throughout the shell, and 2) shape of the shell. Although these two reasons by no means explain *all* of the instances of shell trade for use in artifact manufacture, they do cover the majority of cases. Since the unique spiral shape of sinistral whelk shells is proposed as the main reason for the use of these shells to make artifacts, I now turn to a discussion of previous explanations of marine shell exchange in the Southeast.

Marine Shell Trade During Mississippian Times

The best explanation to date for long-distance trade of marine shell artifacts during the Mississippian was put forth by James A. Brown et al. (1990). They termed their model the "Prestige Goods Economy," in which imported valuables in an economy are in short supply, and there is competition for the necessary wealth for social

obligations. This model has many merits, and comes closest to an explanation of agency. Little doubt exists that marine shells were items of high value (Prentice 1987).

Under the Prestige Goods Economy model, marine shells are lumped with foreign goods such as copper, chert, galena, and mica. These materials all originated at different places, and sometimes were traded distances of hundreds of miles (Brown et al. 1990). However, if a particular social obligation required, for instance, the gift of a marine shell artifact, then under this model, *any* marine shell would do. This is not the case, since most marine shell artifacts recovered from inland Mississippian sites are of a specific type and/or species (Brown et al. 1990:260; Hale 1976; Milanich 1979).

If the category of valued material is not just "marine shells," but "marine shells of a specific type," then archaeologists should scrutinize the particular type of shell that was exchanged. This approach involves finding out the reason(s) this shell was set apart as different or unique. Since sinistral whelks coil in the opposite direction compared with all other large marine snails in the Gulf of Mexico and Atlantic Ocean, it seems likely we are dealing with a structural archaeological approach. Jerald Milanich (1979:86) implied just such an approach when he wrote that "a left-handed spiral may have had a significance different from that of a right-handed spiral."

Structuralism assumes that the human mind works in orderly ways, creating contrasts and opposition (Leone 1982:742; Wylie 1982:40). Structural archaeology often does not include economic motivations for behavior; Leone (1982) stated that it opposes many materialist approaches. (See also Lévi-Strauss's [1963] *Structural Anthropology*, which is applied mostly to social structures.) However, the case study of Mississippian

marine shell exchange offers an example in which materialist and structural models can work together. If sinistral shells were conceptualized as the embodiment of a left-handed spiral (in opposition to a right-handed spiral) we begin to understand why Mississippian peoples made shell engravings almost exclusively on sinistral shells (see Chapter 4). Additionally, these shells functioned in an economic capacity. They were traded from coastal areas, and presumably high value was placed on them. The artifacts were then used to legitimate social relations, as shown by Brown et al. (1990). I advocate that, not only can the material realm of a culture influence and alter the ideological realm, but that the ideological realm can modify the material realm.

Some archaeologists argue that a structuralist approach, for example, questioning why one shell was chosen over another for engraving, is nothing but particularism. I agree that some research questions are particularistic and have no scientific value. However, I submit that an understanding of Mississippian concepts of circular directionality will help us to understand some of their other archaeological remains, chiefly mounds. In addition, concepts of spirals may have, at times, driven an economy of long-distance trade. These reasons give us ample reason to try to understand indigenous ideas surrounding marine shells. Bruno Latour (1996:5) believes that, "what matters in a definition of science [is] innovation in the agencies that furnish our world." Discovering the motivation underlying Mississippian marine shell trade is not just particularism, but may help us to understand other apsects of Mississippian material culture, and also shell artifacts in other parts of the world.

The next section examines previous attempts to interpret spirals in the Southeast, and presents evidence showing the difference between the two types of spirals, and indigenous Southeastern ideology of spirals.

Previous Interpretations of Southeastern Shell and Spiral Ideology

Only two archaeologists, Jerald Milanich and Thomas Emerson, have speculated on the reason(s) for the high frequency of sinistral whelk shell artifacts. Milanich (1979:86) wrote that "a left-handed spiral may have had a significance different from that of a right-handed spiral," and that clay vessels in the shape of lightning whelk shells indicated that "spirals had special significance" (Milanich 1979:95). He tacitly agreed with David S. Phelps' conclusion (1970:98-99) that Southeastern symbolism is "a duplicate of that in Mesoamerica proper. . . and can only be understood when explained in terms of the ideological source." Charles Hudson (1976:88) also discussed Southeastern symbolism, suggesting that there is an "undeniable similarity of some of the Southeastern Ceremonial Complex symbols to symbols used in Mesoamerica." Phelps tried to show the similarities of symbols between Mesoamerican and Southeast ceramic motifs (Phelps 1970).

Thomas Emerson also discussed spiral symbolism and shells, and suggested various meanings for spirals. Emerson (1989:71) admitted that, "The spiral/scroll form has a large number of symbolic associations," and points out (1989:73) that "the sun moves clockwise in Southeastern symbolism." He relied on Hudson (1976:405) to hypothesize that spirals are associated with serpents and the underworld. Emerson

(1989:72) cited Hudson (1976:333) to show that clockwise spirals are "closely related to the movement of the sun." Hudson (1976), a secondary resource on ethnohistoric documents, was citing an account of the Natchez tribe in southern Louisiana. Among the Natchez people, leaders were referred to as "Suns" (du Pratz 1975 [1774]). At an 18th century Natchez funeral ceremony, the corpse of one of their leaders (whose title was the "Stung Serpent"), was carried in a procession of clockwise spirals until it reached the funeral temple (du Pratz 1774:339). Figure 6.1 is a tracing of du Pratz' rendition of the funeral procession of Stung Serpent.

Emerson discussed marine snail shell columellas and their association with life/fertility, water, and underworld symbolism. Both Phelps (1970) and Milanich (1979) attempted to demonstrate a possible connection of Southeastern symbols with those of the Maya. The connections with water and the underworld were made by Emerson due to two things: 1) the connection of marine shell cups with the purifying ritual that involved drinking *cassina* liquid (Milanich 1979); and, 2) an assumption that spiral symbols in the Southeast had a direct connection to spiral symbols in the Mayan area.

Spirals and shells, then, according to Emerson (1989:71-73) may be associated with serpents, the underworld, the sun, water, and life/fertility. Emerson recognized the confusing array of contexts with which spirals are affiliated. However, the sun (fire) and water (liquids) are of two separate domains that do not mix in the Southeast , and spiral symbols need to be examined solely in terms of Southeastern ideology.

Both Milanich and Emerson refer to Phelps' (1970) interpretation of spirals, and so an understanding of Phelps' (1970) publication is necessary here. These references by

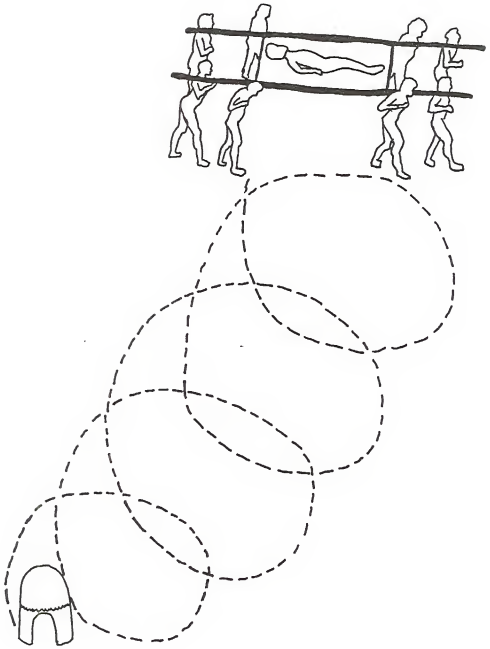


Figure 6.1. Clockwise path of Stung Serpent. After du Pratz (1774:339)

Milanich and Emerson to Phelps' work can only be adequately assessed by a consideration of the time and circumstances during which they were written. There is a long history of comparison of Southeastern artifacts to Mesoamerican artifacts (Nutall 1932; Phelps 1970; Phillips and Brown 1978; Sears 1977; Thomas 1985:309 [1894]; Waring and Holder 1945:29-30). Milanich was writing during a time when many Mayan glyphs were just beginning to be deciphered. Emerson was searching for all references to spirals. Phelps, in his publication, relied upon J. Eric S. Thompson's (1971) book entitled, *Maya Hieroglyphic Writing*, originally published in 1950 before Mayan glyphs (except calendrics) had been deciphered. Thompson devoted very little space to spiral symbols, and those that are depicted by him have no resemblance at all to the spirals appearing on Southeastern artifacts. Some of the Mayan glyphs with spirals illustrated by Thompson (1971) appear in Figure 6.2. Thompson tabulated what he considered to be "water" symbols, including jade, *xoc* fish, circlets, serpent god of 13, *kan* cross, *yax*, "shell" or "bone," moan bird, spiral, and grapes (Thompson 1971:277). Phelps does not address why he believed only the cross and spiral were imported into Southeastern symbolism.

Spirals and crosses are both basic geometric shapes. It is most parsimonious to assume that these symbols were autochthonous in both the Southeast and Mesoamerican areas, until, and if, available evidence supports otherwise. This is not to say that there was *no* commerce or connection between the two areas, only that there is no convincing evidence that the interactions had any measurable impact on spiral and cross symbols. As Muller (1989:13) points out, "the dominant elements of eastern ritual do not easily

fall into Mesoamerican forms. . . Rather, . . . indirect contact rather than direct intrusion seems to explain the general similarities between the eastern materials and those of other New World areas." I agree with Jon Muller when he states that (1995:318):

> In my opinion, supposed Mesoamerican influences in the art and architecture of the Southeast evaporate on close examination of styles and themes. We should especially be skeptical of the supposition that obvious symbolic associations (*such as marine shells with water*) are due to 'contacts.' [emphasis added]

We should dismiss, for the time being, associations of spirals with water in Southeastern symbolism, since these associations originated under the assumption that Southeastern ideology was derived from Mesoamerican ideology (see also Griffin 1990:12).

In contrast, associations of spirals with the path of the sun did originate in the Southeast. Milanich (1979) and Emerson (1989) are in agreement that spirals have special significance in Southeastern ideology, as gleaned from ethnohistoric documentation from the Southeast. Emerson agreed with Hudson that "clockwise spirals" are related to the path of the sun. Both Emerson and Hudson were clearly referring to the spiral path of the Natchez leader "Stung Serpent" (Figure 6.1). This is the same spiral that appears on the apex of sinistral whelk shells (Figure 6.3). It is impossible for it to be the other spiral, which is a mirror image of the sinistral whelk shell spiral. Additional evidence of spiral ideology can be obtained from ethnohistorical and ethnographic sources.

Ethnohistoric and Ethnographic Evidence of Spiral and Shell Ideology

Ethnohistoric Reports

William Bartram provided us with a detailed description of a ceremonial sacred spiral fire among the historic Creek tribe. He has even supplemented his written

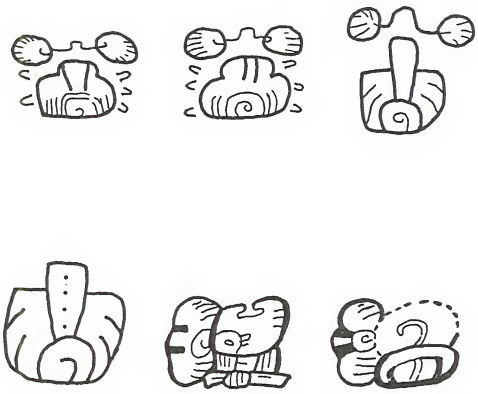
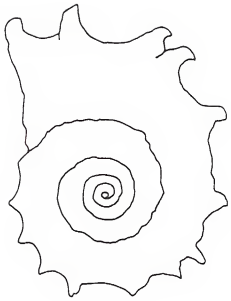


Figure 6.2. Mayan glyphs with spiral motifs. After Thompson (1971:fig. 41)

description with a drawing (Bartram 1976:54 [1789]). The drawing is crucial for an understanding of the direction of the sacred spiral fire, and I reproduce it here as Figure 6.4. Unfortunately, the written description and the illustration appeared in separate publications, and I believe this to be the reason for their previously unnoticed significance. Bartram's description (1928 [1791]:357-358) is as follows; keep in mind that he describes first the building, then the lighting of the fire:

> As their vigils and manner of conducting their vespers and mystical fire in this rotunda, are extremely singular, . . . I shall proceed to describe them. In the first place, the governor or officer who has the management of this business, with his servants attending, orders the black drink to be brewed, which is a decoction or infusion of the leaves and tender shoots of the Cassine: this is done under an open shed or pavilion, . . . directly opposite the door of the council-house. Next he orders bundles of dry canes to be brought in: these are previously split and broken in pieces to about the length of two feet, and then places obliquely crossways upon one another on the floor, forming a spiral circle round about the great centre pillar, rising to a foot or eighteen inches in height from the ground; and this circle spreading as it proceeds round and round, often repeated from right to left, every revolution encreases its diameter, and at length extend to the distance of ten or twelve feet from the centre, more or less, according to the length of time the assembly or meeting is tocontinue. . . The exterior extremity or outer end of the *spiral circle* takes fire and immediately rises into a bright flame, . . . which gradually and slowly creeps round the center pillar, *with the course of the sun*, feeding on the dry canes, and affords a cheerful, gentle and sufficient light until the circle is consumed, when the council breaks up. . . . The assembly being now seated, and the house illuminated, two middle aged men, . . . come in together at the door, each having *very large conch shells full of black drink*, and advance . . ." [emphases added]

Another account (Hawkins, in Swanton 1928a:178) from about 1798 also stated that the sacred fire among Creek people is "laid in a spiral circle." Bartram's description and illustration correspond well with du Pratz's description of clockwise path of the dead leader ("Sun") among the Natchez (Figure 6.1).



Busycon sinistrum, apical view (from above).

Figure 6.3. Apex of sinistral whelk shell.

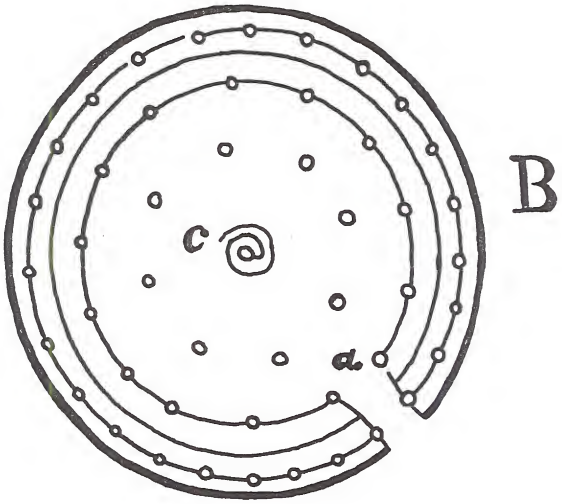


Figure 6.4. Bartram's drawing of the rotunda, and the spiral fire at the center. After Bartram (1976:54 [1789]).

Natchez leaders ensured that the "eternal fire" did not extinguish itself. A clockwise path was taken by a "Sun" at death. We now have two separate ethnohistoric accounts clearly stating that a clockwise spiral represents the path of the sun. Bartram, an Englishman, and du Pratz, a Frenchman, agree in their descriptions.

In the Southeast, fire is thought to be the sun's representative on earth (Bell 1990; Lankford 1987: Swanton 1928d). Hence, the sun in the sky is intimately associated with fire. At the paramount ceremony of the year, the *poskita* (sometimes called *busk*, or first-fruit ceremony), all fires are extinguished and a new fire is made. The new fire is then brought to all campsites. These ceremonies are still held faithfully every year among some Southeastern peoples. At the *poskita* ceremony, purifying liquids are drunk in copious quantities. It is these purifying liquids which are thought to have been contained by sinistral whelk shell cups (Milanich 1979). The association of the sun with fire is integral to the concept that clockwise represents the path of the sun. As shown by William Bartram (1928 [1791]) and du Pratz 1975 [1774]) the sacred spiral fire represents the path of the sun (clockwise).

Ethnohistoric accounts that mention shell cups as holding purifying liquids (usually *casseena*) include James Adair (1971 [1775]), William Bartram (1928 [1791]), Jonathan Dickinson (1985 [1699], a military ranger for General Oglethorpe in 1739-1742 (in Mereness 1916), and Major Caleb Swan, U.S.A, (in Schoolcraft 1855:266). The use of *casseena* is an ancient one, and continues to this day.

Ethnographic Reports

Shell cups

Ethnographic reports indicate that *casseena* is still in use. The ethnographies of John Swanton (1928b) and James Howard (1968) attest to the continued use of the purification ritual, and *casseena*. John H. Moore (personal communication 1997) told me of the continued use of *casseena* in Creek rituals. The most recent published ethnography to mention marine shell cups being used as sacred containers in Creek ceremonies was John R. Swanton in 1928. Swanton noted in the 1920's that among one Coweta band of Creek people, "large conch shells" were still used in the *poskita* ceremony, and were held in great reverence (1928b:503).

Current indigenous thoughts on shells

To understand contemporary beliefs concerning shells by indigenous Southeastern peoples, and in the absence of documentary records, I undertook to visit small groups of tribal members in September of 1995 to ask them. I visited Seminole, Euchee, and Creek people in Oklahoma. I brought xerographic copies of pictures of artifacts, as well as shell artifact reproductions that I had made. The Euchee people had no opinion at all, and viewed them as interesting trinkets. The Seminole and Creek people had strong opinions that marine shells are not permitted to be touched, or even to be in the house. Here some of the responses:

> "I got a sea shell from a fair once, but my parents told me to get it out of the house." (Seminole)
>
> "My uncle once put a seashell to his ear, and was deaf after that." (Seminole)
>
> "Some people believe seashells cause sickness. They call it Crooked Mouth sickness." (Creek)

These responses were corroborated by William Marquardt (personal communication), who visited the Seminole tribe in south Florida in August of 1995. When asked about conch shells, "They believe that the sound of the sea in these shells can make you deaf, and that's why they don't use them for jewelry. They can make you deaf, and 'carry you away.'" Marquardt said that the word for conch shell is *sestesumka* in Creek, meaning "carry you away."

A contrasting view is held by an indigenous south Florida tribe, the Muspa. Though not well known, a few references mention the Muspa, perhaps a town of the Calusa tribe (Hann 1991:47; Mooney 1907:195; 963; Swanton 1946:64). I spoke with a Muspa tribal member, who stated that, "The shell is the ruling clan. All *caciques* here are shell clan. Men's shell totem is conch. Women's shells are land snails." The tribal appellation "Calusa" may derive from *Calushathee* (Miccosukee), or *Calushulke* (Creek), meaning "Reapers of the Sea," or *Calachaalee* (Miccosukee), meaning "The Shell People" (MacMahon 1996:17). These bits of information indicate that Muspa/Calusa peoples from south Florida were not generally afraid of shells, and perhaps had, and have, an affinity with them.

These responses indicate that marine shells have strong power for Southeastern peoples. Of course, much more time needs to be invested for a more thorough ethnographic study. I suspect that only the bare minimum of information has been uncovered. However, these preliminary data indicate that strong feelings continue to exist regarding marine shells. This attitude toward sea shells could not have been absorbed from Europeans, since Europeans have no aversion, nor an affinity, toward

marine shells. We can safely assume that the taboo among some indigenous Southeasterners existed before people arrived from Europe.

Circular dance directions

The importance placed on circular direction by Southeastern peoples has led me to explore circular directionality in their dances. If the concept of circular direction was as basic as I suggest, then we should see a pattern in dance directions. In most dances, spirals are not performed, as it is easy to depict circular direction in a circular dance. In contrast, spiral motifs on material objects have an advantage over circles in that they are able to show intended direction.

Descriptions of the dances have appeared in ethnohistories and ethnographies. however these descriptions do not usually give reasons for dancing counterclockwise rather than clockwise, or *vice versa*. An exception is Swanton (1928b:522), who stated that among the Mikasuki, "the usual path was sinistral. . . Another reason was that the sun goes that way."

Once again, William Bartram provides us with a good description, and once again du Pratz concurs with Bartram. Both describe circular dances in which males dance clockwise, and females dance counterclockwise. Bartram describes dances among the Creek tribe (1928 [1791]:396):

> They have an endless variety of steps, but the most common, and that which I term the most civil, and indeed the most admired and practised amongst themselves, is a slow shuffling alternate step; both feet move forward one after the other, first the right foot foremost, and next the left, moving one after the other, in opposite circles, i.e., first a circle of young men, and within, a circle of young women, moving together opposite ways, the *men with the course of the sun, and the females contrary to it*;. . .(emphasis added)

Le Page du Pratz described the dance after the lighting of the new fire at the annual *poskita* ceremony (du Pratz 1975 [1774]:323-324):

> A man places himself on the ground with a pot covered with a deer-skin, in the manner of a drum, to beat time to the dances; round him the women form themselves into a circle, not joining hands, but at some distance from each other; and they are inclosed by the men in another circle, who have in each hand a chichicois, or calabash, with a stick thrust through it to serve for a handle. When the dance begins, the women move round the men in the centre, from left to right, and the men contrariwise from right to left, and they sometimes narrow and sometimes widen their circles.

Most of the dances of Southeastern tribes are named after animals. Certain dances were (and are) performed only by males, and others only by females. It should be kept in mind that some of the authors did not describe the circular direction of all of the dances. Hence, many of the dances, although performed by a tribe, lack the particular information of interest here. Kurath (1953) gave a general overview of the circular directions among all indigenous North American groups. She summarized circular dance directions; mostly counterclockwise direction among tribes east of the Mississippi River, while clockwise among tribes west of the Mississippi River. It is also noted in the literature that the general direction of circular dances is counterclockwise (Howard and Levine 1990; Speck 1911:161; Speck and Broom 1951:23).

Discussion and Summary

The only distinguishing characteristic of sinistral whelk shells separating them from other large snail shells is that they are sinistral. As noted in Chapter 3, only one other genus along the coastal waters of the Atlantic Ocean or Gulf of Mexico exhibits this characteristic, and it is a tiny (6mm) sponge-dwelling snail. Large whelks tend to be

dull white in color. Therefore the natural color of the shell was not a factor in shell choice. Nor are these shells simply the easiest large snails to obtain--the horse conch is (see Chapter 3). These factors, coupled with the ethnographic and ethnohistoric evidence presented above, support the idea that spiral ideology was a major component in shell choice for artifact manufacture.

Spirals As Representations of Circular Direction

It is important to distinguish between the two types of spirals, which are mirror images of each other (Figure 6.5). What I have called the "sinistral spiral" is the same spiral that appears on the spire (see Chapter 3 for shell terminology) of sinistral whelk shells (compare Figures 5.3 and 5.4). This is the same spiral in Bartram's drawing (Figure 6.4) and the same spiral drawn by du Pratz (Figure 6.1). As noted in Chapter 3, nearly all snails world-wide are dextral, and show the dextral spiral on their spires, while sinistral whelks show a sinistral spiral. The direction of the spiral can be viewed in two ways; from the center moving out or from the outside moving toward the center. Ethnohistoric accounts (see above) tell us that circular direction in Southeastern spiral ideology is in toward the center. Hence, the sinistral spiral represents a clockwise direction.

Western cultures depict circular direction by drawing a circle with arrow symbols superimposed on the curved line to show the direction. This design was probably not used by people in the Southeast, since their method of conceptualizing circular direction was with the use of spirals (see above). Since Westerners do not think of spirals as embodying specific circular directions, the concept has not been an easy one to grasp.

Spirals and Meaning

Why would females dance in counterclockwise circles, while males dance clockwise? The clockwise path of the sun is associated with war and death. Many ethnohistoric accounts observe that a dead person's spirit travels west or follows the sun (Hawkins in Swanton 1928b: 514; Hennepin 1938 [1683]:175; Mooney 1992 [1891 and 1900]:246, 262; Schoolcraft in Swanton 1928b:513; Swanton 1928b:512; Walker, in Nabokov and Easton 1989: 111), or that the sun "dies" at sunset (Adair 1971 [1775]:80). The only exception to beliefs that the soul travels westward was among the South Carolina Chicora people, who said that souls go northward (Swanton 1928c:709). The association of death with the clockwise path of the sun now becomes clear. Clockwise is therefore a dangerous path. In the Southeast, usually only males were warriors, while females were givers of life, i.e., they give birth. Females, as givers of life, are diametrically opposed to death, and this is reflected in the circular dances.

Conclusion

It has been demonstrated that spirals may have had special significance in the Southeast. Ethnohistoric and ethnographic accounts in the Southeast indicate that sinistral spirals were sacred, akin to the clockwise path of the sun. Southeastern people manifested these ideas in circular dances. A clockwise direction, however, may have been dangerous, linked with death and war, and perhaps was embodied by a sinistral spiral.

Figure 6.5. Mirror-image spirals.

Alternately, sinistral whelk cups are easier to handle and use for right-handed people. If Mississippians were mostly right-handed, then sinistral shell cups may have simply been more convenient. This "ergonomic" factor may have been important in continuing the use of sinistral shells for cups. However, if it was a matter of ergonomics, than why were sinistral shells used for gorgets, pendants, beads, etc.? The ethnohistoric and ethnographic evidence presented in this chapter suggests that spirals and/or shells had some kind of power or special meaning. Ergonomics and ideology may have functioned in tandem.

Some of the ideology concerning marine shells has survived to the present day, albeit in changed form. Shells are taboo for modern Creeks and Seminoles, while indigenous south Florida peoples may have/had a strong affinity with shells. Concepts having to do with marine shells need to be investigated further.

An understanding of spiral ideology may help us to interpret other archaeological remains in the Southeast. A study involving categorical opposites operates under the theory of structural anthropology. If Southeastern archaeologists analyze archaeological remains while keeping indigenous spiral concepts in mind, we might be able to decipher patterns heretofore unrecognizable to us. These remains may consist of mound building, and/or motifs on various media, including copper, ceramics, and shell. Chapter 7 summarizes this dissertation, and discusses some human-made mounds in the Southeast with prominent spiral components as a part of their design.

CHAPTER 7
SUMMARY AND CONCLUSIONS

Summary

Shells at inland archaeological sites can be considered to be zooarchaeological remains, since they are the remains of animals made into artifacts. Though they are artifacts, the specimens that constituted my archaeological sample were analyzed in terms of the shell species themselves, rather than focusing on the engraved designs that may have been imposed upon them. This approach to the topic lent a fresh perspective on Mississippian marine shell artifacts, leading to some interesting findings.

Left-handed or sinistral lightning whelks were by far the most widely traded large marine shells during Mississippian times. This corroborates comments by previous researchers (Chapter 2) that most marine shell artifacts from Mississippian sites are made from lightning whelk shells. These shell artifacts (including cups, masks, gorgets, beads, and pendants) have not been found in areas where food refuse was dumped (middens) at the four target archaeological sites (Cahokia, Etowah, Moundville, and Spiro), signaling that they functioned as status or religious objects, rather than utilitarian tools. Supporting this assumption is that lightning whelk ceramic effigies were made. Whelk shell cups are the only exotic object that effigies were patterned after. Marine shell engravings occurred almost exclusively on sinistral whelk shells (approximately 97%). This further supports that the choice of shell was deliberate and significant.

Whelk shells do not have any intrinsic color that would predispose them for use in artifact manufacture. In shell artifacts world-wide, an important factor is color is throughout the shell, so that the color is still visible after the shell is worked, be it iridescent or a single color (see Chapter 6). Most of the marine shell artifacts found at Mississippian sites are white throughout the shell, negating the possibility that they sought colored shells. The small, whole shell beads may have been desired for their color; such is the case with the Pacific dwarf olive shell beads excavated from Spiro which are pinkish/purple.

The other characteristic used to choose shells for artifact manufacture is shape (Chapter 6), and it is this category that sinistral whelks fall under. Sinistral whelks are unique and rare in the way their shells spiral, as discussed in Chapter 3. It is the clockwise direction of the spiral that sinistral whelks may have represented among Mississippian peoples (see Chapter 6) that may be noteworthy to anthropologists and archaeologists. Southeastern indigenous dances are mostly circular, and other Southeastern archaeological remains may reflect the significance of circular direction, and help us to better interpret them (see below). Cups made from sinistral shells are easier for right-handed people to handle, and this may have been a factor for shell cups. Nevertheless, other artifacts were also made from sinistral shells and these have no ergonomic value.

The analysis of frequencies of motifs on various media (marine shell, ceramics, copper and stone) shows mixed results. The circle is common on all four media, while

depictions of humans are most frequent on marine shell and stone. Many more engraved fragments need to be analyzed in order to increase the sample size.

The ethnographic research presented in Chapter 6 shows that marine shells of all kinds are taboo among extant members of Seminole, Creek (Muskoge), and Yuchi tribes. In contrast, Calusa/Muspa peoples may have had an affinity with sea shells. Even though only a small amount of time was spent interviewing tribal members, the information was quick to surface. More work on indigenous peoples' ideas concerning shells and circular direction should help us to more fully understand the possible connection between marine snail shells and concepts of circular directionality.

Marine shells were fashioned into artifacts by cutting with chert implements, and by fire to make the shell easier to work. While all shell parts are represented, burned specimens from the Cahokia site consisted mainly (88%) of the columella portion of the sinistral whelk shell. This is the hardest part of the shell to cut, and the application of heat burns off the organic constituents, leaving the burned portion brittle and chalky. Experimental archaeology (Chapter 4) supports that heat makes shell easier to work. In contrast, collections from the Spiro site revealed specimens that had the columella cut out of the shell with a chert tool, presumably without being burned. These two techniques need to be investigated further to better understand the process of artifact manufacture. Experimental archaeology is a good way to continue these studies.

Trade Routes

A major research area involves establishing the source of sinistral whelk shells. I have narrowed down the possibilities to the west coast of Florida, using the apex angle of sinistral whelks (Chapters 3 and 4). Most of the other shell species may also have been obtained from this area.

One of the important findings concerning trade routes is of Pacific coast shells at the Spiro site in Oklahoma. This indicates a much larger trade network that previously thought, and has implications for the economies of many areas. It is likely that the dwarf olive shells (*Olivella biplicata*) identified from Spiro came from the Channel Islands off of California, where a shell bead industry existed, using dwarf olive shells (Chapter 4). Trade goods were moving great distances, and people were probably more mobile than their sedentary villages would suggest during this time period. This finding also underscores that many archaeological collections should be re-examined, especially considering the technology that has been developed to aid archaeologists analyzing artifacts and ecofacts, such as trace elemental studies. Collections research is still yielding important results.

Implications for Southeastern Archaeologists

Economy

If, as suggested in Chapter 4, most of the shells originated on the west coast of Florida during Mississippian times, the Florida economy needs to be reinterpreted in terms of an export economy. Such a valuable commodity would allow exotic resources

to be imported to Florida, such as animal hides or willow bark. Such remains are extremely difficult, if not impossible, to detect in the archaeological record. Nevertheless, the possibility needs to be explored. An export/import economy would also have altered the indigenous politics of the Florida west coast, and may have contributed to the rise of the non-agricultural chiefdoms that existed on the southwest coast of Florida (Marquardt 1985; 1986). It is on the southwest coast of Florida that the most lightning whelk shells are found in archaeological middens, as well as from modern collections (Appendix I).

Spiral Mounds

If circular direction was an important concept among Southeastern people, we should find other archaeological remains that incorporate this concept into their design. Foremost among these remains are earthen mounds. Most existing Southeastern mounds have no suggestion of a spiral design. However, a few were fashioned with some type of spiral as one of the components (Morgan 1980).

Mounds with a spiral incorporated as one of the design elements include Mound B at the Lamar site, GA, the Serpent mound in southern Ohio, and Mound 1 at the Rembert site, GA. Mounds with a suspected spiral ramp to the summit include the burial mound at the Pineland site in Florida (William Marquardt, personal communication), and the Nacoochee mound in Georgia. Mounds with possible ramps on the left side of the mound (i.e., sinistral ramps) include Monks mound at the Cahokia site in Illinois, and Mound A at the Etowah site in Georgia.

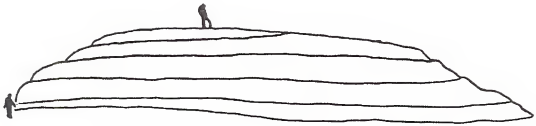


Figure 6.1. Mound B at the Lamar site, Georgia. After Kelly (1935:245).

Mound B at the Lamar site near Macon, Georgia is well-known to have a spiral path to the summit. It was first recorded by Arthur Kelly (1935), and is also illustrated by Morgan (1980:119). Figure 6.1 shows the general outline of this mound, along with the figure of a man for scale. It was in use during late Mississippian times. The path is counterclockwise leading to the summit.

The Serpent mound is in southern Ohio, Adams County (McLean 1885). It is a linear earthwork in the shape of a snake, and the tail is coiled in a spiral shape. This is the "sinistral" spiral discussed in Chapter 6. Though it lies just outside the geographical range of Southeastern peoples, the Serpent mound's existence lends credence to the idea that spirals had special meaning. The motif analysis presented in Chapter 5 supports that snakes are associated with sinistral spirals.

William Bartram in 1773 was the first to make note of a mound on the Savannah River in Georgia (possibly the Rembert mound) with a spiral path leading to the top (1928:265-266 [1791]):

> The great mount is in the form of a cone, about forty or hundred yards, entirely composed of the loamy rich earth of the low grounds: the top or apex is flat: *a spiral path* or track leading from the ground up to the top is still visible, where now grows a large, beautiful spreading Red Cedar (*Juniperus Americana*): there appear four niches, excavated out of the sides of this hill, at different heights from the base, fronting the four cardinal points; these niches or sentry boxes are entered into from the winding path, and seem to have been meant for resting places or look-outs. . . there are several less ones [mounds] round about the great one, with some very large tetragon terraces on each side, near one hundred yards in length, and their surface four, six, eight and ten feet above the ground on which they stand. [emphasis added]

Cyrus Thomas (1985:315 [1894]) believed this site to be the Rembert group in Elbert County, Georgia, four miles upstream of the mouth of the Broad River. Another traveler from 1848 corroborated Bartram's description (in Thomas 1985:315 [1894]). However,

when Thomas saw the Rembert site in the late 1800's, he thought that it had changed dramatically due to flooding. Thomas' description of the supposed spiral mound (Mound 1), makes no mention of the spiral path, but indicates it was a flat-topped circular mound 9.14 meters (30 feet) tall. He partially excavated Mound 1, and illustrated the stratigraphy.

Warren K. Moorehead also discussed the possibility of spiral paths at Mound 1 at the Rembert site and the Nacoochee mound. Moorehead states (1932:15) that evidence of a spiral path at the Rembert site "had apparently disappeared, owing to cultivation or erosion, which seems to be true also of the pathway leading to the summit of the Nacoochee mound, if Mooney's identification is correct." No mention is made of a spiral path on the Nacoochee mound by the 1918 Heye Foundation expedition to the site (Heye et al. 1918).

Cyrus Thomas' (1985:301 [1894]) description of Mound A at the Etowah site in Georgia says that the ramp on the east side, leading straight to the summit, "must have been too steep for any other purpose than descent." The enigmatic ramp around the south side does not currently reach the top of the mound. Earlier descriptions of Mound A show that the south side ramp *did* reach the top of the mound (see Wauchope 1966). Though the ramp does not make a full circle, it is a ramp leading in a sinistral direction to the top.

Another mound with a possible sinistral path to the summit is Monks mound at the Cahokia site. Early descriptions of Monks mound indicate that the primary path to the top was sinistral, and that the mound was intended to face east (Reed 1969). A

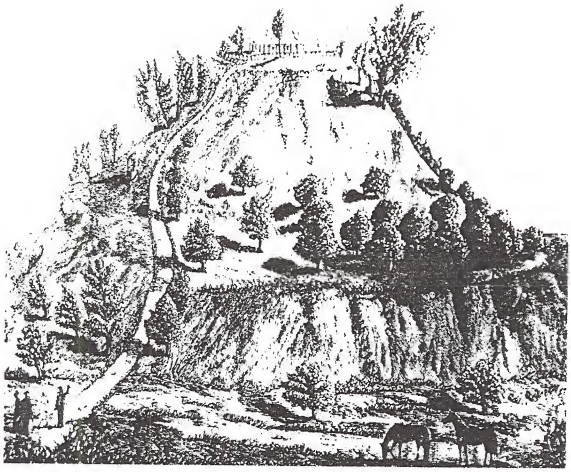


Figure 6.2. Monks mound in the 1800's. After Fowler (1969:10).

owner of the Rembert mound group in Georgia remembers the flood during which these mounds were damaged. He speaks of the changes made by water (Thomas 1985:315-316 [1894]):

> These excavations are denominated 'washouts' because the present owner of the land, Mr. Tate, remembers when they were made by high water. Nevertheless, judging from present appearance, there are reasons for believing that at least a portion of the earth used in the construction of the mounds was obtained here, leaving depressions, and that, during high water, when the land was overflowed, as is frequently the case, channels were washed out from them to the river. The south margin of the southern 'washout' is fully 4 feet higher than the land on which the mounds stand.

Warren K. Moorehead describes water damage at the Etowah site in Georgia (1932:5):

> Mrs. Tumlin and her son, Mr. Lewis Tumlin, informed us that there have been several heavy floods in the Etowah Valley and much of the soil had been washed away. This should be commented upon as it is quite important. Twice between 1880 and 1890 abnormally high waters caused great damage to properties upon this river and along the Coosa in northern Alabama. A considerable portion of the south end of Mound C, estimated from 30 to 45 feet in extent, was washed away. . . Flood waters damaged this portion of the village very seriously since the surface sloped toward the river. Mrs. Tumlin states that much of the soil was carried into the river. Eight or 10 acres were thus affected, hence, no pottery fragments, and but few flint implements, have been found in this particular area.

Water damage has also been noted at other sites. Later drawings of Monks mound at Cahokia show clear evidence of water damage and erosion (Fowler 1969). This process of erosion and mound slumping continues to this day (Collins and Chalfant 1993). Further work needs to be done to verify or dispute that the previously mentioned mounds had "spiral" ramps leading to their summits. If true, it would agree well with Vernon J. Knight's hypothesis (1981) that mounds are icons of the world in the Southeastern world view. Erosion of mounds may have led archaeologists to overlook the possibility of spiral ramps.

Conclusions

The study of shells from archaeological sites has proven to be a fruitful avenue of research to pursue. The existence of Pacific coast shells at Spiro was an exciting find. Evidence supporting the use of fire to work shell was uncovered from Cahokia. This supports ethnohistoric records. This dissertation was based on malacological collections, archaeological collections, ethnography, and written records, showing that these methods of research have much to offer.

The fact that lightning whelk shells were an overwhelming choice for artifact making was perplexing to me, and has led me ask questions that would never have occurred to me otherwise. These include the significance of circular direction in various forms of expression including dances, the process of artifact manufacture, questions of indigenous Southeastern cosmology, the role of ideology in Southeastern archaeology, and the examination of shells used in artifact production world-wide.

An important facet of this dissertation is a firm understanding of the natural history of marine shells of the Atlantic Ocean. Without this knowledge, many of the research questions would never have arisen, nor would many have been answered. This work points the way toward continued work on shells as they relate to economics, ideology, and politics among Mississippian peoples.

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APPENDIX I
DATA FROM FLMNH MALACOLOGY COLLECTION

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon candelabrum	135700	Yucatán	Bay of Campeche		31.0	4.3
Busycon candelabrum	135699	Yucatán	Campeche		27.4	6.2
Busycon candelabrum	21480	Yucatán	Campeche			9.5
Busycon candelabrum	153190	Yucatán	Campeche Banks		27.4	10.2
Busycon candelabrum	21484	Yucatán	Campeche			10.9
Busycon candelabrum	33770	Yucatán	Contoy Light		deep water	11.1
Busycon candelabrum	153190	Yucatán	Campeche Banks		27.4	11.4
Busycon candelabrum	33770	Yucatán	Contoy Light		deep water	11.5
Busycon candelabrum	153191	Yucatán	Bay of Campeche	shrimp trawl	27.4	12.5
Busycon candelabrum	196133	Yucatán	Campeche		dredged	13.6
Busycon candelabrum	153128	Yucatán	Campeche Banks		36.5	14
Busycon candelabrum	21480	Yucatán	Campeche			14.2
Busycon candelabrum	191978	Yucatán	Bay of Campeche		18.3	14.4
Busycon candelabrum	33770	Yucatán	Contoy Light		deep water	15.9
Busycon candelabrum	153249	Honduras	Caribbean	shrimp trawl	27.4	17
Busycon carica	185196	NJ	Cape May	Sunset Beach		1.7
Busycon carica	187320	FL	Volusia	Ponce deLeon Inlet		2
Busycon carica	185196	NJ	Cape May	Sunset Beach		2.1
Busycon carica	8623	FL	Brevard	Oceanus		2.3
Busycon carica	8623	FL	Brevard	Oceanus		2.4
Busycon carica	8623	FL	Brevard	Oceanus		2.6
Busycon carica	187321	FL	Volusia	Coronado Beach		3.2
Busycon carica	185171	GA	McIntosh	Sapelo Is.		3.3
Busycon carica	187322	FL	Brevard	Cocoa Beach		3.3
Busycon carica	135702	FL	Palm Beach	Lk. Worth		3.4
Busycon carica	187319	FL	Volusia	Coronado Bch.		4
Busycon carica	170756	SC	Charleston	Bulls Is.		4.2
Busycon carica	187261	FL	Brevard	Cape Canaveral		4.3
Busycon carica	187261	FL	Brevard	Cape Canaveral		4.3
Busycon carica	153194	FL	Brevard	Cocoa Beach		4.3
Busycon carica	185171	GA	McIntosh	Sapelo is.		4.5
Busycon carica	8623	FL	Brevard	Oceanus		5
Busycon carica	135702	FL	Palm Beach	Lk. Worth		5
Busycon carica	135702	FL	Palm Beach	Lk. Worth		5
Busycon carica	170756	SC	Charleston	Bulls Is		5.1
Busycon carica	153194	FL	Brevard	Cocoa Beach		5.1

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon carica	122853	MA	Cape Cod			5.3
Busycon carica	8623	FL	Brevard	Oceanus		5.3
Busycon carica	46148	SC	Beaufort	Port Royal Sound		5.4
Busycon carica	135701	FL	Volusia	Daytona Beach		5.8
Busycon carica	233708	MA	Barnstable	Chatham		6.4
Busycon carica	8623	FL	Brevard	Oceanus		6.4
Busycon carica	153194	FL	Brevard	Cocoa Beach		6.6
Busycon carica	122813	SC	Isle of Pines			6.7
Busycon carica	185171	GA	McIntosh	Sapelo Is.		6.7
Busycon carica	153194	FL	Brevard	Cocoa Beach		6.8
Busycon carica	185188	MA	Barnstable	Cape Cod		6.8
Busycon carica	122853	MA	Cape Cod			7.1
Busycon carica	46148	SC	Beaufort	Port Royal Sound		7.2
Busycon carica	153194	FL	Brevard	Cocoa Beach		7.5
Busycon carica	8623	FL	Brevard	Oceanus		7.5
Busycon carica	2470	SC	Charleston	Edisto Is.		7.6
Busycon carica	2470	SC	Charleston	Edisto Is.		7.6
Busycon carica	21482	NC	Carteret	Beaufort		7.8
Busycon carica	8626	FL	Nassau	Fernandina		7.9
Busycon carica	135702	FL	Palm Beach	Lk. Worth		7.9
Busycon carica	153194	FL	Brevard	Cocoa Beach		8.1
Busycon carica	174712	FL	Volusia	Daytona Beach		8.2
Busycon carica	2470	SC	Charleston	Edisto Is.		8.4
Busycon carica	170756	SC	Charleston	Bulls Is.		8.5
Busycon carica	8623	FL	Brevard	Oceanus		8.7
Busycon carica	122853	MA	Cape Cod			8.7
Busycon carica	69991	FL	St. Johns	St. Augustine		8.7
Busycon carica	8623	FL	Brevard	Oceanus		8.8
Busycon carica	187332	FL	Brevard	Cocoa Beach		8.8
Busycon carica	2470	SC	Charleston	Edisto Is.		8.9
Busycon carica	187316	MA	Barnstable	Cape Cod		9.1
Busycon carica	187316	MA	Barnstable	Cape Cod		9.3
Busycon carica	187330	FL	Brevard	Cocoa Beach		9.5
Busycon carica	8625	FL	Brevard	Cape Canaveral	7.3	9.5
Busycon carica	21485	FL	Wilbur by the Sea			9.6
Busycon carica	122813	SC	Isle of Pines			9.7
Busycon carica	2470	SC	Charleston	Edisto Is.		9.7
Busycon carica	170755	SC	Charleston	Bulls Is.		10
Busycon carica	8624	FL	St. Johns	St. Aug. Beach		10.1
Busycon carica	174712	FL	Volusia	Daytona Beach		10.2
Busycon carica	187316	MA	Barnstable	Cape Cod		10.2
Busycon carica	187332	FL	Brevard	Cocoa Beach		10.3
Busycon carica	196132	FL	Volusia	Daytona Beach		10.8
Busycon carica	69991	FL	St. Johns	St. Augustine		10.9
Busycon carica	187316	MA	Barnstable	Cape Cod		11
Busycon carica	2470	SC	Charleston	Edisto Is.		11
Busycon carica	187267	MA	Barnstable	Cape Cod		11.2

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon carica	187316	MA	Barnstable	Cape Cod		11.2
Busycon carica	69991	FL	St. Johns	St. Augustine		11.5
Busycon carica	8624	FL	St. Johns	St. Aug. Beach		11.5
Busycon carica	187330	FL	Brevard	Cocoa Beach		11.6
Busycon carica	21492	FL	Brevard	Cape Kennedy		11.6
Busycon carica	187316	MA	Barnstable	Cape Cod		11.6
Busycon carica	185188	MA	Barnstable	Cape Cod		11.7
Busycon carica	2190	NY	Nassau	Long Island		11.7
Busycon carica	8624	FL	St. Johns	St. Aug. Beach		11.7
Busycon carica	37056	SC	Berkeley			11.8
Busycon carica	187316	MA	Barnstable	Cape Cod		11.9
Busycon carica	16549	SC	Charleston	Bulls Bay		12.1
Busycon carica	8680	NC	Carteret	Cape Lookout		12.1
Busycon carica	16549	SC	Charleston	Bulls Bay		12.3
Busycon carica	153254	FL	Nassau			12.4
Busycon carica	153256	FL	Nassau	Fernandina	21.9	12.4
Busycon carica	16549	SC	Charleston	Bulls Bay		12.5
Busycon carica	23320	FL	Nassau	Fernandina		12.5
Busycon carica	8623	FL	Brevard	Oceanus		12.6
Busycon carica	187267	MA	Barnstable	Cape Cod		12.7
Busycon carica	185196	NJ	Cape May	Sunset Beach		12.8
Busycon carica	187316	MA	Barnstable	Cape Cod		12.9
Busycon carica	187316	MA	Barnstable	Cape Cod		13.3
Busycon carica	187316	MA	Barnstable	Cape Cod		13.4
Busycon carica	8625	FL	Brevard	Cape Canaveral	7.3	13.6
Busycon carica	153261	FL	Nassau	Fernandina		13.7
Busycon carica	120895	NC	Carteret	Moorehead City		13.9
Busycon carica	129480	MA	Barnstable	Chatham		14
Busycon carica	2470	SC	Charleston	Edisto Is.		14.1
Busycon carica	16549	SC	Charleston	Bulls Bay		14.4
Busycon carica	212659	GA	Glynn	Brunswiek		14.5
Busycon carica	153251	VA	Northampton	Willis Wharf		14.7
Busycon carica	153255	FL	Brevard	Cape Canaveral		14.8
Busycon carica	16549	SC	Charleston	Bulls Bay		15.3
Busycon carica	192387	FL	Brevard	Canaveral		15.4
Busycon carica	21492	FL	Brevard	Cape Kennedy		15.4
Busycon carica	56942	SC	Charleston	Sullivan's Is.		15.5
Busycon carica	187267	MA	Barnstable	Cape Cod		15.7
Busycon carica	8625	FL	Brevard	Cape Canaveral	7.3	15.7
Busycon carica	129480	MA	Barnstable	Chatham		15.8
Busycon carica	129496	NJ	Cape May	Cape May Point		15.9
Busycon carica	16550	SC	Charleston	Folly Beach		16
Busycon carica	56942	SC	Charleston	Sullivan's Is.		16
Busycon carica	21490	MA	Pt. Gammon	Yarmouth		16
Busycon carica	128775	MA	Barnstable	Oysterville		16.3
Busycon carica	129492	SC	Beaufort	Hiltonhead Is.		16.4
Busycon carica	187316	MA	Barnstable	Cape Cod		16.5

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon carica	192386	MA	Nantucket	Nantucket		16.8
Busycon carica	187316	MA	Barnstable	Cape Cod		17
Busycon carica	8624	FL	St. John's	St. Augustine Bch.		17
Busycon carica	153252	VA	Northampton	Willis Wharf		17.2
Busycon carica	56941	MA	Pt. Gammon	Yarmouth		17.7
Busycon carica	128775	MA	Barnstable	Oysterville		17.9
Busycon carica	198020	FL	Brevard	Cape Canaveral		18.1
Busycon carica	212660	NY	Suffolk	Orient Pt. State Pk.		18.1
Busycon carica	182615	GA	Glynn	Sea Is.		18.2
Busycon carica	170755	SC	Charleston	Bulls Is.		18.4
Busycon carica	8623	FL	Brevard	Oceanus		18.6
Busycon carica	182615	GA	Glynn	Sea Is.		19.1
Busycon carica	13245	FL	Brevard	Oceanus		19.1
Busycon carica	170755	SC	Charleston	Bulls Is.		19.4
Busycon carica	170755	SC	Charleston	Bulls Is.		21.7
Busycon carica	8623	FL	Brevard	Oceanus		22.5
Busycon pulleyi	135707	TX	Aransas	Port Aransas		3.8
Busycon pulleyi	135707	TX	Aransas	Port Aransas		4.8
Busycon pulleyi	135707	TX	Aransas	Port Aransas		6
Busycon pulleyi	37053	TX	Nueces	Corpus Christi		7.8
Busycon pulleyi	153180	TX	Nueces	Corpus Christi Bay		8.3
Busycon pulleyi	153183	TX	Nueces	Corpus Christi Bay		8.5
Busycon pulleyi	21602	Veracruz	Palma Sola			8.9
Busycon pulleyi	153183	TX	Nueces	Corpus Christi Bay		9.8
Busycon pulleyi	153184	TX	Aransas	St. Joseph Is.		9.8
Busycon pulleyi	153260	TX	Nueces	Corpus Christi Bay		11.9
Busycon pulleyi	21486	Yucatan				12.1
Busycon pulleyi	197974	Yucatan	Campeche Bay			15.9
Busycon pulleyi	153258	TX	Nueces	Corpus Christi Bay		18.8
Busycon pulleyi	156849	Yucatan	Campeche		27.4	20.9
Busycon pulleyi	169715	TX	Galveston	Galveston	23.8	22.1
Busycon pulleyi	21638	Yucatan	Campeche			25.1
Busycon sinistrum	25502	FL	Monroe	Dry Tortugas		1.4
Busycon sinistrum		FL	Lee	Ft. Myers Bch.		1.8
Busycon sinistrum	25502	FL	Monroe	Dry Tortugas		1.9
Busycon sinistrum	25502	FL	Monroe	Dry Tortugas		2
Busycon sinistrum	8644	FL	Pinellas	Clearwater Keys		2.1
Busycon sinistrum	164349	FL	Monroe	Marathon	3.0	2.1
Busycon sinistrum	153204	FL	Monroe	Grassy Key		2.2
Busycon sinistrum	8644	FL	Pinellas	Clearwater Keys		2.3
Busycon sinistrum	169797	FL	Monroe	Grassy Key		2.4
Busycon sinistrum	1688	FL	Lee	Captiva Is.		2.6
Busycon sinistrum	235226	FL	Collier	Marco Is.		2.6
Busycon sinistrum	164349	FL	Monroe	Marathon	3.0	2.6
Busycon sinistrum	8666	FL	Lee	Captiva Is.		2.7
Busycon sinistrum	169797	FL	Monroe	Grassy Key		2.7
Busycon sinistrum	169797	FL	Monroe	Grassy Key		2.8

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon sinistrum	149847	FL	Monroe	Grassy Key		2.8
Busycon sinistrum	169797	FL	Monroe	Grassy Key		2.8
Busycon sinistrum	169797	FL	Monroe	Grassy Key		2.9
Busycon sinistrum		FL	Lee	Ft. Myers Bch.		2.9
Busycon sinistrum		FL	Hillsborough	Tampa		2.9
Busycon sinistrum	169797	FL	Monroe	Grassy Key		2.9
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3
Busycon sinistrum	18718	FL	Lee	Sanibel Is.		3
Busycon sinistrum	153204	FL	Monroe	Grassy Key		3
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.1
Busycon sinistrum	127350	FL	Hillsborough	Egmont Key		3.1
Busycon sinistrum	1688	FL	Lee	Captiva Is.		3.1
Busycon sinistrum	153211	FL	Monroe	Little Duck Key		3.1
Busycon sinistrum	187331	FL	Okaloosa	Destin	32.9	3.2
Busycon sinistrum	8644	FL	Pinellas	Clearwater Keys		3.2
Busycon sinistrum	8644	FL	Pinellas	Clearwater Keys		3.2
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.3
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.3
Busycon sinistrum	157509	FL	Monroe	Little Duck Key		3.3
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.3
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.3
Busycon sinistrum	149847	FL	Monroe	Grassy Key		3.3
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.4
Busycon sinistrum	153204	FL	Monroe	Grassy Key		3.4
Busycon sinistrum	157525	FL	Broward	Pompano Bch. fill	18.3	3.4
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.5
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.5
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.5
Busycon sinistrum	157509	FL	Monroe	Little Duck Key		3.5
Busycon sinistrum	8664	FL	Sarasota	Sarasota		3.6
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.6
Busycon sinistrum	153211	FL	Monroe	Little Duck Key		3.6
Busycon sinistrum	149847	FL	Monroe	Grassy Key		3.7
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.8
Busycon sinistrum	8644	FL	Pinellas	Clearwater Keys		3.8
Busycon sinistrum	153204	FL	Monroe	Grassy Key		3.8
Busycon sinistrum	8665	FL	Monroe	Dry Tortugas		3.8
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.9
Busycon sinistrum	169797	FL	Monroe	Grassy Key		3.9
Busycon sinistrum	153204	FL	Monroe	Grassy Key		4
Busycon sinistrum	1712	FL	Sarasota	Sarasota		4
Busycon sinistrum	18718	FL	Lee	Sanibel Is.		4
Busycon sinistrum	169797	FL	Monroe	Grassy Key		4
Busycon sinistrum	169797	FL	Monroe	Grassy Key		4.1
Busycon sinistrum	235226	FL	Collier	Marco Is.		4.1
Busycon sinistrum	1712	FL	Sarasota	Sarasota		4.2

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon sinistrum	121253	FL	Pinellas	St. Pete. Bch.	0.6	4.2
Busycon sinistrum	1688	FL	Lee	Captiva Is.		4.3
Busycon sinistrum	235226	FL	Collier	Marco Is.		4.4
Busycon sinistrum	235226	FL	Collier	Marco Is.		4.5
Busycon sinistrum	153211	FL	Monroe	Little Duck Key		4.5
Busycon sinistrum	197422	FL	Collier	Marco Is.		4.5
Busycon sinistrum	188805	FL	Monroe	Grassy Key		4.5
Busycon sinistrum	149847	FL	Monroe	Grassy Key		4.5
Busycon sinistrum	8643	FL	Collier	Gordon's Pass		4.5
Busycon sinistrum	8651	FL	Monroe	Marquesas		4.6
Busycon sinistrum	8666	FL	Lee	Captiva Is.		4.6
Busycon sinistrum	18718	FL	Lee	Sanibel Is.		4.7
Busycon sinistrum	1712	FL	Sarasota	Sarasota		4.8
Busycon sinistrum	8658	FL	Nassau	Fernandina		4.8
Busycon sinistrum		FL	Hillsborough	Tampa		4.9
Busycon sinistrum	164349	FL	Monroe	Marathon	3.0	4.9
Busycon sinistrum	235226	FL	Collier	Marco Is.		4.9
Busycon sinistrum	157525	FL	Broward	Pompano Bch. fill	18.3	5
Busycon sinistrum	153211	FL	Monroe	Little Duck Key		5
Busycon sinistrum	235226	FL	Collier	Marco Is.		5
Busycon sinistrum	1712	FL	Sarasota	Sarasota		5
Busycon sinistrum	8658	FL	Nassau	Fernandina		5
Busycon sinistrum	235226	FL	Collier	Marco Is.		5.1
Busycon sinistrum	1712	FL	Sarasota	Sarasota		5.1
Busycon sinistrum	235226	FL	Collier	Marco Is.		5.2
Busycon sinistrum	235226	FL	Collier	Marco Is.		5.3
Busycon sinistrum	18718	FL	Lee	Sanibel Is.		5.3
Busycon sinistrum	153211	FL	Monroe	Little Duck Key		5.3
Busycon sinistrum	149847	FL	Monroe	Grassy Key		5.3
Busycon sinistrum	8646	FL	St. Johns	Summer Haven		5.3
Busycon sinistrum	169797	FL	Monroe	Grassy Key		5.4
Busycon sinistrum	153211	FL	Monroe	Little Duck Key		5.5
Busycon sinistrum	153210	FL	Monroe	Grassy Key		5.5
Busycon sinistrum	8664	FL	Sarasota	Sarasota		5.5
Busycon sinistrum	135704	FL	Pinellas	Tarpon Bay		5.5
Busycon sinistrum	235185	FL	Manatee	Longboat Key		5.7
Busycon sinistrum	153211	FL	Monroe	Little Duck Key		5.7
Busycon sinistrum	8643	FL	Collier	Gordon's Pass		5.7
Busycon sinistrum	135705	FL	Palm Beach	Lk. Worth		5.9
Busycon sinistrum	235226	FL	Collier	Marco Is.		5.9
Busycon sinistrum	8652	FL	Bay	St. Andrew's Bay		5.9
Busycon sinistrum	8669	FL	Pinellas	Old Tampa Bay		5.9
Busycon sinistrum	8643	FL	Collier	Gordon's Pass		6
Busycon sinistrum	8662	FL	Collier	Collier City		6
Busycon sinistrum	235226	FL	Collier	Marco Is.		6.3
Busycon sinistrum	1711	FL	Sarasota	Sarasota		6.3
Busycon sinistrum	135703	FL	Dade	Virginia Key	1.8	6.3

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon sinistrum	8658	FL	Nassau	Fernandina		6.3
Busycon sinistrum	182608	FL	Lee	Sanibel Is.		6.3
Busycon sinistrum	18718	FL	Lee	Sanibel Is.		6.5
Busycon sinistrum	235572	FL	Volusia	Coronado Bch.		6.5
Busycon sinistrum	188805	FL	Monroe	Grassy Key		6.6
Busycon sinistrum	8663	FL	Pinellas	Gulfport		6.7
Busycon sinistrum	8670	FL	Collier	Naples		6.7
Busycon sinistrum	157525	FL	Broward	Pompano Bch. fill	18.3	6.7
Busycon sinistrum		FL	Dade	Biscayne Bay		6.8
Busycon sinistrum	1688	FL	Lee	Captiva Is.		6.8
Busycon sinistrum	157525	FL	Broward	Pompano Bch. fill	18.3	7
Busycon sinistrum	235226	FL	Collier	Marco Is.		7
Busycon sinistrum	8667	FL	Collier	Marco Is.		7
Busycon sinistrum	235185	FL	Manatee	Longboat Key		7
Busycon sinistrum	157525	FL	Broward	Pompano Bch. fill	18.3	7.1
Busycon sinistrum	153208	FL	Collier	Marco		7.1
Busycon sinistrum	2019	FL	Manatee	Anna Maria Is.		7.1
Busycon sinistrum	25037	Yucatan	Campeche	Isla Aguada		7.2
Busycon sinistrum	121317	FL	Pinellas	St. Pete.	0.3	7.2
Busycon sinistrum	8658	FL	Nassau	Fernandina		7.2
Busycon sinistrum	8661	FL	Nassau	Fernandina		7.2
Busycon sinistrum	157509	FL	Monroe	Little Duck Key		7.3
Busycon sinistrum	8643	FL	Collier	Gordon's Pass		7.3
Busycon sinistrum	8606	FL	Pinellas	Ozona		7.4
Busycon sinistrum	8643	FL	Collier	Gordon's Pass		7.5
Busycon sinistrum	235185	FL	Manatee	Longboat Key		7.6
Busycon sinistrum	235226	FL	Collier	Marco Is.		7.6
Busycon sinistrum	90078?	FL	Brevard	Merritt Is.		7.6
Busycon sinistrum	8668	FL	Collier	Collier City		7.7
Busycon sinistrum	8643	FL	Collier	Gordon's Pass		7.7
Busycon sinistrum	8653	FL	Pinellas	Old Tampa Bay		7.8
Busycon sinistrum	8606	FL	Pinellas	Ozona		7.8
Busycon sinistrum	120978	FL	Manatee	Bradenton		7.9
Busycon sinistrum	235226	FL	Collier	Marco Is.		7.9
Busycon sinistrum	8669	FL	Pinellas	Old Tampa Bay		7.9
Busycon sinistrum	8642	FL	Monroe	Dry Tortugas		8
Busycon sinistrum	120978	FL	Manatee	Bradenton		8
Busycon sinistrum	8661	FL	Nassau	Fernandina		8
Busycon sinistrum	70265	FL	Pepys Bayou			8
Busycon sinistrum	235226	FL	Collier	Marco Is.		8.1
Busycon sinistrum	8661	FL	Nassau	Fernandina		8.1
Busycon sinistrum	8658	FL	Nassau	Fernandina		8.2
Busycon sinistrum	8653	FL	Pinellas	Old Tampa Bay		8.2
Busycon sinistrum	135704	FL	Pinellas	Tarpon Bay		8.3
Busycon sinistrum	235226	FL	Collier	Marco Is.		8.4
Busycon sinistrum	8655	FL	Monroe	Dry Tortugas		8.4
Busycon sinistrum	153210	FL	Monroe	Grassy Key		8.5

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon sinistrum	235226	FL	Collier	Marco Is.		8.5
Busycon sinistrum	8608	FL	Lee	Captiva Is.		8.7
Busycon sinistrum	235159	FL	Lee	Sanibel Is.		8.7
Busycon sinistrum	900787	FL	Brevard	Merritt Is.		8.7
Busycon sinistrum	182608	FL	Lee	Sanibel Is.		8.7
Busycon sinistrum	8643	FL	Collier	Gordon's Pass		8.8
Busycon sinistrum	8643	FL	Collier	Gordon's Pass		8.8
Busycon sinistrum	25236	FL	Charlotte	Placida		8.8
Busycon sinistrum	182608	FL	Lee	Sanibel Is.		8.8
Busycon sinistrum	235226	FL	Collier	Marco Is.		8.9
Busycon sinistrum	192388	FL	Collier	Marco Beh.		9.1
Busycon sinistrum	235185	FL	Manatee	Longboat Key		9.1
Busycon sinistrum	182608	FL	Lee	Sanibel Is.		9.3
Busycon sinistrum	153192	FL	Lee	Pine Island		9.4
Busycon sinistrum	21492	FL	Sarasota	Sarasota Key		9.5
Busycon sinistrum	235576	FL	Volusia	Coronado Beh.		9.5
Busycon sinistrum	182608	FL	Lee	Sanibel Is.		9.5
Busycon sinistrum	153193	FL	Lee	Ft. Myers Beh.		9.6
Busycon sinistrum	1688	FL	Lee	Captiva Is.		9.6
Busycon sinistrum		Yucatan	Campeche			9.6
Busycon sinistrum	181613	FL	Duval	Little Talbot Is.		9.6
Busycon sinistrum	8644	FL	Pinellas	Clearwater Keys		9.7
Busycon sinistrum		Virgin Is.	St. Croix			9.7
Busycon sinistrum	164200	FL	Hillsborough	Tampa Bay		9.7
Busycon sinistrum	196144	FL	Pinellas	Boca Ciega Bay		9.8
Busycon sinistrum	8630	FL	Manatee	Anna Maria Is.		9.8
Busycon sinistrum	8642	FL	Monroe	Dry Tortugas		9.9
Busycon sinistrum	120977	FL	Pinellas	St. Pete. Beh.	0.6	9.9
Busycon sinistrum	153187	Yucatan	Campeche		29.3	10
Busycon sinistrum	196144	FL	Pinellas	Boca Ciega Bay		10.1
Busycon sinistrum	8671	FL	Lee	Captiva Is.		10.2
Busycon sinistrum	8643	FL	Collier	Gordon's Pass		10.3
Busycon sinistrum	180856	FL	Collier	Marco Is. Beach		10.4
Busycon sinistrum	2019	FL	Manatee	Anna Maria Is.		10.5
Busycon sinistrum	8666	FL	Lee	Captiva Is.		10.5
Busycon sinistrum	9187	FL	Lee	Punta Rassa		10.5
Busycon sinistrum	8657	FL	Monroe	Dry Tortugas		10.7
Busycon sinistrum	187318	FL	Pinellas	Boca Ciega Bay	1.8	10.7
Busycon sinistrum	9185	FL	Monroe	Ohio Key		10.7
Busycon sinistrum	153187	Yucatan	Campeche		29.3	10.8
Busycon sinistrum	153211	FL	Monroe	Little Duck Key		11
Busycon sinistrum		Yucatan	Campeche			11
Busycon sinistrum	8606	FL	Pinellas	Ozona		11
Busycon sinistrum	153203	FL	Nassau	Fernandina Beh.		11.1
Busycon sinistrum	120977	FL	Pinellas	St. Pete. Beh.	0.6	11.2
Busycon sinistrum	182608	FL	Lee	Sanibel Is.		11.2
Busycon sinistrum	235159	FL	Lee	Sanibel Is.		11.4

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon sinistrum	153208	FL	Collier	Marco		11.5
Busycon sinistrum	8606	FL	Pinellas	Ozona		11.5
Busycon sinistrum	8647	FL	Pinelas	Ozona		11.5
Busycon sinistrum	8670	FL	Collier	Naples		11.6
Busycon sinistrum	180856	FL	Collier	Marco Is. Beach		11.6
Busycon sinistrum	8660	FL	Lee	Estero Is.		11.7
Busycon sinistrum	180856	FL	Collier	Marco Is. Beach		11.7
Busycon sinistrum	8606	FL	Pinellas	Ozona		11.7
Busycon sinistrum	205578	FL	Collier	Marco Is. Beach		11.8
Busycon sinistrum	205578	FL	Collier	Marco Is. Beach		11.9
Busycon sinistrum	8606	FL	Pinellas	Ozona		12
Busycon sinistrum	153181	AL	Mobile	Mobile	21.9	12
Busycon sinistrum	153210	FL	Monroe	Grassy Key		12.2
Busycon sinistrum	8621	FL	Lee	Punta Rassa		12.2
Busycon sinistrum	205578	FL	Collier	Marco Is. Beach		12.2
Busycon sinistrum	8606	FL	Pinellas	Ozona		12.4
Busycon sinistrum	192388	FL	Collier	Marco Bch.		12.4
Busycon sinistrum	205580	FL	Pinellas	Boca Ciega Bay		12.4
Busycon sinistrum	8606	FL	Pinellas	Ozona		12.5
Busycon sinistrum	8644	FL	Pinellas	Clearwater Keys		12.5
Busycon sinistrum	8669	FL	Pinellas	Old Tampa Bay		12.6
Busycon sinistrum	8641	FL	Pinellas	Ozona		12.6
Busycon sinistrum	21636	FL	Manatee	Bradenton		12.7
Busycon sinistrum	180856	FL	Collier	Marco Is. Beach		12.7
Busycon sinistrum	185174	FL	Franklin	Eastpoint		12.8
Busycon sinistrum	125627	FL	Franklin	St. George Is.		12.9
Busycon sinistrum	8615	FL	Pinellas	Ozona		13
Busycon sinistrum	8606	FL	Pinellas	Ozona		13
Busycon sinistrum	8648	FL	Monroe	Woman's Key		13.1
Busycon sinistrum	8606	FL	Pinellas	Ozona		13.1
Busycon sinistrum	180856	FL	Collier	Marco Is. Beach		13.1
Busycon sinistrum	8606	FL	Pinellas	Ozona		13.2
Busycon sinistrum	8606	FL	Pinellas	Ozona		13.2
Busycon sinistrum	128471	FL	Collier	Marco Island		13.2
Busycon sinistrum	6925	FL	Levy	Sea Horse Key	3.0	13.3
Busycon sinistrum	8606	FL	Pinellas	Ozona		13.4
Busycon sinistrum	8621	FL	Lee	Punta Rassa		13.8
Busycon sinistrum	125757	FL	Franklin	Alligator Point		13.8
Busycon sinistrum	235226	FL	Collier	Marco Is.		13.8
Busycon sinistrum	153182	MS	Jackson	Pascagoula	9.1	13.9
Busycon sinistrum	205579	FL	Pinellas	Pass-a-Grille		14.1
Busycon sinistrum	8647	FL	Pinellas	Ozona		14.2
Busycon sinistrum	8614	FL	Lee	Sanibel Is.		14.2
Busycon sinistrum	8606	FL	Pinellas	Ozona		14.2
Busycon sinistrum	8606	FL	Pinellas	Ozona		14.4
Busycon sinistrum	205578	FL	Collier	Marco Is. Beach		14.5
Busycon sinistrum	8608	FL	Lee	Captiva Is.		14.6

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon sinistrum	8606	FL	Pinellas	Ozona		14.8
Busycon sinistrum	153189	Yucatan	Bay of Campeche			15
Busycon sinistrum	8606	FL	Pinellas	Ozona		15.2
Busycon sinistrum	8615	FL	Pinellas	Ozona		15.3
Busycon sinistrum	25235	FL	Charlotte	Placida		15.3
Busycon sinistrum	8653	FL	Pinellas	Old Tampa Bay		15.4
Busycon sinistrum	153219	Yucatan	Campeche Banks		36.6	15.6
Busycon sinistrum	129476	FL	Dade	Miami		15.6
Busycon sinistrum	8644	FL	Pinellas	Clearwater Keys		15.9
Busycon sinistrum	8648	FL	Monroe	Woman's Key		15.9
Busycon sinistrum	8654	FL	Sarasota	Midnight Pass		16
Busycon sinistrum	205578	FL	Collier	Marco Is. Beach		16
Busycon sinistrum	193246	MS	Harrison	Gulfport		16.1
Busycon sinistrum	8611	FL	Pinellas	Gulfport		16.1
Busycon sinistrum	8606	FL	Pinellas	Ozona		16.2
Busycon sinistrum	6915	FL	Monroe	Dry Tortugas		16.2
Busycon sinistrum	8655	FL	Pinellas	Ozona		16.4
Busycon sinistrum	8655	FL	Pinellas	Ozona		16.4
Busycon sinistrum	8655	FL	Pinellas	Ozona		16.5
Busycon sinistrum	8608	FL	Lee	Captiva Is.		16.6
Busycon sinistrum	8645	FL	Pinellas	Clearwater Bay		16.6
Busycon sinistrum	8655	FL	Pinellas	Ozona		16.8
Busycon sinistrum		FL	Pinellas	Boca Ciega Bay		16.9
Busycon sinistrum	203059	FL	Collier	Marco		17
Busycon sinistrum	8608	FL	Lee	Captiva Is.		17.2
Busycon sinistrum	173139	FL	Monroe	Grassy Key		17.2
Busycon sinistrum	21493	Yucatan	Campeche			17.2
Busycon sinistrum	8654	FL	Sarasota	Midnight Pass		17.4
Busycon sinistrum	8608	FL	Lee	Captiva Is.		17.5
Busycon sinistrum	205578	FL	Collier	Marco Is. Beach		17.8
Busycon sinistrum	25236	FL	Charlotte	Placida		17.8
Busycon sinistrum	124846	FL	Levy	Cedar Key		18
Busycon sinistrum	8649	FL	Pinellas	Long Key		18.2
Busycon sinistrum	153237	AL	Mobile	Mobile	16.5	18.3
Busycon sinistrum	8607	FL	Brevard	Oceanus		18.3
Busycon sinistrum	70265	FL	Papys Bayou			18.5
Busycon sinistrum	8607	FL	Brevard	Oceanus		18.7
Busycon sinistrum	198008	FL	Collier	Marco Is. Beach		18.8
Busycon sinistrum	8620	FL	Levy	Cedar Key		18.9
Busycon sinistrum	8671	FL	Lee	Captiva Is.		19.2
Busycon sinistrum	8614	FL	Lee	Sanibel Is.		19.2
Busycon sinistrum	8614	FL	Lee	Sanibel Is.		19.2
Busycon sinistrum	8655	FL	Pinellas	Ozona		19.2
Busycon sinistrum	8659	FL	Collier	Marco Is.		19.5
Busycon sinistrum	182605	FL	Levy	Cedar Key		19.5
Busycon sinistrum	92918	FL	Charlotte	Placida	0.3	19.6
Busycon sinistrum	8645	FL	Pinellas	Clearwater Bay		19.8

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Busycon sinistrum	153253	Yucatan	Campeche Banks		27.4	19.9
Busycon sinistrum	21493	Yucatan	Campeche			20
Busycon sinistrum	129476	FL	Dade	Miami		20.1
Busycon sinistrum	187317	FL	Santa Rosa	Santa Rosa Is.		20.2
Busycon sinistrum	8607	FL	Brevard	Oceanus		20.2
Busycon sinistrum	205534	FL	Brevard	Canaveral		20.9
Busycon sinistrum	8619	FL	Gulf	St. Joseph's Bay		21.1
Busycon sinistrum	174017	FL	Monroe	Little Duck Key		21.3
Busycon sinistrum	8609	FL	Levy	Cedar Key		21.3
Busycon sinistrum	8607	FL	Brevard	Oceanus		21.8
Busycon sinistrum	129485	FL	Collier	Marco Beach		21.9
Busycon sinistrum	150609	AL	Mobile	Mobile	20.1	22.5
Busycon sinistrum	8617	FL	Levy	North Key		22.8
Busycon sinistrum	203059	FL	Collier	Marco		22.9
Busycon sinistrum	169189	FL	Monroe	Grassy Key		23
Busycon sinistrum	182606	FL	Levy	Cedar Key		23
Busycon sinistrum	173144	FL	Monroe	Grassy Key		23
Busycon sinistrum	203060	FL	Brevard	Canaveral		23.1
Busycon sinistrum	8604	FL	Manatee	Mullet Key		23.3
Busycon sinistrum	8610	FL	Pinellas	Clearwater Keys		23.5
Busycon sinistrum	169714	FL	Dade	Key Biscayne	0.9	24.1
Busycon sinistrum	25236	FL	Charlotte	Placida		24.6
Busycon sinistrum	8605	FL	Monroe	Bonefish Key		25
Busycon sinistrum	182607	FL	Levy	Cedar Key		25.1
Busycon sinistrum	8607	FL	Brevard	Oceanus		25.1
Busycon sinistrum	8616	FL	Manatee	Mullet Key		25.1
Busycon sinistrum	8604	FL	Manatee	Mullet Key		25.2
Busycon sinistrum	8604	FL	Manatee	Mullet Key		25.7
Busycon sinistrum	8598	FL	Monroe	Bird Key Reef		25.8
Busycon sinistrum	8604	FL	Manatee	Mullet Key		26
Busycon sinistrum	205535	FL	Pinellas	Crooked Is.		26
Busycon sinistrum	92918	FL	Charlotte	Placida	0.3	26.3
Busycon sinistrum	25235	FL	Charlotte	Placida		26.5
Busycon sinistrum	21671	FL	Hillsborough	Tampa Bay		27
Busycon sinistrum	182607	FL	Levy	Cedar Key		27
Busycon sinistrum	8604	FL	Manatee	Mullet Key		27.3
Busycon sinistrum	129475	FL	Monroe	Woman Key		27.4
Busycon sinistrum	182608	FL	Lee	Sanibel Is.		27.8
Busycon sinistrum	182609	FL	Lee	Captiva Is		27.8
Busycon sinistrum	8619	FL	Gulf	St. Joseph's Bay		28.1
Busycon sinistrum	129475	FL	Monroe	Woman Key		28.7
Busycon sinistrum	8595	FL	Monroe	Key West		29.3
Busycon sinistrum	8612	FL	Levy	Cedar Key		29.5
Busycon sinistrum	8596	FL	Monroe	Boca Grande		29.6
Busycon sinistrum	8599	FL	Lee	Captiva Is.		30.5
Busycon sinistrum	2457	FL	Lee	Blind Pass		30.5
Busycon sinistrum	25234	FL	Charlotte	Placida		30.8

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Busycon sinistrum	8618	FL	Monroe	Boca Grande Key		32.3
Busycon sinistrum	25234	FL	Charlotte	Placida		32.6
Busycon sinistrum	8597	FL	Monroe	Boca Grande Key		34.1
Busycon sinistrum	205536	FL	Pinellas	Crooked Is.		35.9
Busycotypus canaliculatus	191416	FL	Santa Rosa	Santa Rosa Is.		2.3
Busycotypus canaliculatus	8679	FL	Brevard	Oceanus		2.8
Busycotypus canaliculatus	191413	FL	Volusia	Coronado Bch.		2.8
Busycotypus canaliculatus	8679	FL	Brevard	Oceanus		2.8
Busycotypus canaliculatus	8673	FL	Brevard	Oceanus		2.9
Busycotypus canaliculatus	233709	MA	Barnstable	Chatham		3.2
Busycotypus canaliculatus	191404	FL	Volusia	Coronado Bch.		3.3
Busycotypus canaliculatus	191404	FL	Volusia	Coronado Bch.		3.6
Busycotypus canaliculatus	124850	CT	Fairfield	Sherwood Is.		3.9
Busycotypus canaliculatus	8678	FL	St. Johns	St. Augustine		3.9
Busycotypus canaliculatus	191406	FL	Volusia	Coronado Bch.		4.1
Busycotypus canaliculatus	191414	FL	Brevard	Cocoa Bch.		4.1
Busycotypus canaliculatus	233709	MA	Barnstable	Chatham		4.1
Busycotypus canaliculatus	8672	FL	Nassau	Fernandina		4.5
Busycotypus canaliculatus	233709	MA	Barnstable	Chatham		4.6
Busycotypus canaliculatus	8676	FL	Nassau	Fernandina		4.6
Busycotypus canaliculatus	8672	FL	Nassau	Fernandina		4.8
Busycotypus canaliculatus	8672	FL	Nassau	Fernandina		5
Busycotypus canaliculatus	8672	FL	Nassau	Fernandina		5.2
Busycotypus canaliculatus	21491	FL	St. Lucie	Ft. Pierce		5.3
Busycotypus canaliculatus	8676	FL	Nassau	Fernandina		5.4
Busycotypus canaliculatus	191405	FL	Brevard	Cocoa Bch.		5.4
Busycotypus canaliculatus	8672	FL	Nassau	Fernandina		5.5
Busycotypus canaliculatus	8677	FL	Duval			5.5
Busycotypus canaliculatus	191416	FL	Santa Rosa	Santa Rosa Is.		5.5
Busycotypus canaliculatus	185175	NJ	Cape May	Sunset Bch.		5.6
Busycotypus canaliculatus	153217	CT	Fairfield	Sheffield Is.		5.7
Busycotypus canaliculatus	8673	FL	Brevard	Oceanus		5.9
Busycotypus canaliculatus	135709	FL	Brevard	Merritt Is.		6
Busycotypus canaliculatus	135709	FL	Brevard	Merritt Is.		6
Busycotypus canaliculatus	8677	FL	Duval			6.1
Busycotypus canaliculatus	191416	FL	Santa Rosa	Santa Rosa Is.		6.2
Busycotypus canaliculatus	235573	FL	Volusia	Coronado Bch.		6.3
Busycotypus canaliculatus	2016	NY	Queens	Long Is. Sound		6.4
Busycotypus canaliculatus	187269	FL	Brevard	Cocoa Bch.		6.4
Busycotypus canaliculatus	8673	FL	Brevard	Oceanus		6.5
Busycotypus canaliculatus	185175	NJ	Cape May	Sunset Bch.		6.8
Busycotypus canaliculatus	8672	FL	Nassau	Fernandina		7.3
Busycotypus canaliculatus	8673	FL	Brevard	Oceanus		7.6
Busycotypus canaliculatus	8673	FL	Brevard	Oceanus		7.7
Busycotypus canaliculatus	187270	FL	Brevard	Cape Canaveral		7.7
Busycotypus canaliculatus	233709	MA	Barnstable	Chatham		8
Busycotypus canaliculatus	181619	FL	St. Johns	Ft. Matanzas		8.5

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Busycotypus canaliculatus	187268	FL	Brevard	Cocoa Bch.		8.5
Busycotypus canaliculatus	21487	GA	Glynn	St. Simons Sound		9.6
Busycotypus canaliculatus	2016	NY	Queens	Long Is. Sound		9.7
Busycotypus canaliculatus	187268	FL	Brevard	Cocoa Bch.		9.9
Busycotypus canaliculatus	21491	FL	St. Lucie	Ft. Pierce		10.1
Busycotypus canaliculatus	187265	FL	Brevard	Cape Canaveral		10.3
Busycotypus canaliculatus	235595	FL	Franklin	Bald Pt.		10.3
Busycotypus canaliculatus	187269	FL	Brevard	Cocoa Bch.		10.7
Busycotypus canaliculatus	187268	FL	Brevard	Cocoa Bch.		10.8
Busycotypus canaliculatus	233709	MA	Barnstable	Chatham		11.1
Busycotypus canaliculatus	120893	NC	Carteret	Bogue Sound	0.3	11.2
Busycotypus canaliculatus	187270	FL	Brevard	Cape Canaveral		11.6
Busycotypus canaliculatus	122718	NC	Carteret	Bogue Sound		11.6
Busycotypus canaliculatus	187268	FL	Brevard	Cocoa Bch.		11.9
Busycotypus canaliculatus	129499	MA	Barnstable	Oysterville		12
Busycotypus canaliculatus	153217	CT	Fairfield	Sheffield Is.		12.1
Busycotypus canaliculatus	187268	FL	Brevard	Cocoa Bch.		12.2
Busycotypus canaliculatus	187268	FL	Brevard	Cocoa Bch.		12.2
Busycotypus canaliculatus	2016	NY	Queens	Long Is. Sound		12.3
Busycotypus canaliculatus	187268	FL	Brevard	Cocoa Bch.		13.3
Busycotypus canaliculatus	153217	CT	Fairfield	Sheffield Is.		13.5
Busycotypus canaliculatus	56943	NY	Suffolk	Huntington		13.8
Busycotypus canaliculatus	21481	NY	Queens	Rockaway Bch.		14
Busycotypus canaliculatus	56943	NY	Suffolk	Huntington		14.1
Busycotypus canaliculatus	21481	NY	Queens	Rockaway Bch.		14.5
Busycotypus canaliculatus	23328	FL	Nassau	Fernandina		14.8
Busycotypus canaliculatus	8677	FL	Duval			15.1
Busycotypus canaliculatus	213165	NJ	Ocean	Barnegat Bay		15.2
Busycotypus canaliculatus	56943	NY	Suffolk	Huntington		15.3
Busycotypus canaliculatus	8673	FL	Brevard	Oceanus		15.3
Busycotypus canaliculatus	8673	FL	Brevard	Oceanus		15.6
Busycotypus canaliculatus	129498	GA	McIntosh	Sapelo		15.6
Busycotypus canaliculatus	187264	FL	Brevard	Cape Canaveral		16.1
Busycotypus canaliculatus	56943	NY	Suffolk	Huntington		16.3
Busycotypus canaliculatus	21488	FL	St. Lucie	Ft. Pierce		16.5
Busycotypus canaliculatus	8673	FL	Brevard	Oceanus		16.8
Busycotypus canaliculatus	21489	GA	Glynn	3 mi. off St. Simons		17.7
Busycotypus canaliculatus	153250	SC	Charleston	Bulls Is.		19.7
Busycotypus canaliculatus		VA	Northampton	Cape Charles		19.9
Cassis madagascariensis	120936	Honduras	Roatan Is.	grass flats		4.8
Cassis madagascariensis	11384	West Indies				5.6
Cassis madagascariensis	158668	FL	Palm Beach	Lk. Worth		5.7
Cassis madagascariensis	120935	Honduras	Roatan Is.	grass flats		5.8
Cassis madagascariensis	158668	FL	Palm Beach	Lk. Worth		6.8
Cassis madagascariensis	120941	Honduras	Roatan Is.	grass flats		6.8
Cassis madagascariensis	21406	FL	Lee	Captiva Is.		7.3
Cassis madagascariensis	158668	FL	Palm Beach	Lk. Worth		7.4

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Cassis madagascariensis	120943	Honduras	Roatan Is.	grass flats		7.8
Cassis madagascariensis	13388	FL	Levy	Cedar Key		8
Cassis madagascariensis	162649	Virgin Is.	St. Croix			8
Cassis madagascariensis	13388	FL	Levy	Cedar Key		8
Cassis madagascariensis	21639	Campeche	w. Campeche		18.3	8.2
Cassis madagascariensis	158668	FL	Palm Beach	Lk. Worth		9.2
Cassis madagascariensis	120942	FL	Brevard	25 mi. off coast	36.6	9.6
Cassis madagascariensis	153245	FL	Palm Beach	Palm Beach	45.7	10.4
Cassis madagascariensis	21639	Campeche	w. Campeche		18.3	11
Cassis madagascariensis	120944	Honduras	Roatan Is.	grass flats		11.2
Cassis madagascariensis	176322	Bahamas	Bimini Is.	South Cat Cay		12.8
Cassis madagascariensis	197970	FL	Monroe	Off Key West		13.3
Cassis madagascariensis	8583	FL	St. John's	St. Augustine		15.8
Cassis madagascariensis	21639	Campeche	w. Campeche		18.3	16.5
Cassis madagascariensis	8488	FL	Monroe	Bird Key		17.7
Cassis madagascariensis	203063	Bahamas	Bimini Is.	N. Bimini Is.		17.7
Cassis madagascariensis	197971	Bahamas	Frazier Hog Key			18.2
Cassis madagascariensis	173152	FL	Palm Beach	Lk. Worth		18.3
Cassis madagascariensis	11386	Virgin Is.	St. Croix			20.5
Cassis madagascariensis	13390	FL	Monroe	Keys		20.6
Cassis madagascariensis	169496	Bahamas	Berry Is.	Frazier's Hog Cay		21.3
Cassis madagascariensis	8585	FL	Monroe	Crawl-Fish Key		22.5
Cassis madagascariensis	182618	FL	Palm Beach	Lk. Worth		22.6
Cassis madagascariensis	8584	FL	Lee	Captiva Is.		22.8
Cassis madagascariensis	203063	Bahamas	Bimini Is.	N. Bimini Is.		22.9
Cassis madagascariensis	13391	FL	Monroe	Bush Key		23.3
Cassis madagascariensis	8582	FL	Monroe	Dry Tortugas		23.6
Cassis madagascariensis	8485	FL	Monroe	Bush Key		27.2
Cassis madagascariensis	8582	FL	Monroe	Dry Tortugas		27.3
Cassis madagascariensis	8483	FL	Monroe	Bush Key		27.5
Cassis madagascariensis	13390	FL	Monroe	Keys		29.3
Cassis tuberosa	171200	FL	Collier	off Naples	62.2	1.1
Cassis tuberosa	154910	FL	Okaloosa	Destin	25.6	1.5
Cassis tuberosa	154910	FL	Okaloosa	Destin	25.6	1.6
Cassis tuberosa	157299	FL	Broward	Pompano beh. fill	18.3	1.7
Cassis tuberosa	157299	FL	Broward	Pompano beh. fill	18.3	1.8
Cassis tuberosa	157299	FL	Broward	Pompano beh. fill	18.3	2.3
Cassis tuberosa	154910	FL	Okaloosa	Destin	25.6	2.3
Cassis tuberosa	157299	FL	Broward	Pompano beh. fill	18.3	2.3
Cassis tuberosa	146837	FL	Collier	Naples	62.2	2.5
Cassis tuberosa	11386	Virgin Is.	St. Croix			2.6
Cassis tuberosa	157299	FL	Broward	Pompano beh. fill	18.3	2.7
Cassis tuberosa	162593	Puerto Rico	Rincon			2.8
Cassis tuberosa	146838	FL	Okaloosa	Destin	25.6	2.8
Cassis tuberosa	157299	FL	Broward	Pompano beh. fill	18.3	2.9
Cassis tuberosa	162595	Virgin Is.	St. Croix			3
Cassis tuberosa	158666	FL	Palm Beach	Lk. Worth		3.1

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Cassis tuberosa	157299	FL	Broward	Pompano bch. fill	18.3	3.3
Cassis tuberosa	55470	Cuba				3.3
Cassis tuberosa	157299	FL	Broward	Pompano bch. fill	18.3	3.4
Cassis tuberosa	157299	FL	Broward	Pompano bch. fill	18.3	3.4
Cassis tuberosa	157299	FL	Broward	Pompano bch. fill	18.3	3.6
Cassis tuberosa	157299	FL	Broward	Pompano bch. fill	18.3	3.6
Cassis tuberosa	34052	Bahamas	New Providence			3.9
Cassis tuberosa	55470	Cuba				4
Cassis tuberosa	34052	Bahamas	New Providence			4.3
Cassis tuberosa	158666	FL	Palm Beach	Lk. Worth		4.5
Cassis tuberosa	128504	Bahamas	S. Bimini Is.			5.4
Cassis tuberosa	162595	Puerto Rico	Punta Algarrobo			5.9
Cassis tuberosa	128504	Bahamas	S. Bimini Is.			7.2
Cassis tuberosa	55469	Dom. Repub.	Monte Cristi Prov.	Mt. of Christ		7.8
Cassis tuberosa	55469	Dom. Repub.	Monte Cristi Prov.	Mt. of Christ		8.3
Cassis tuberosa	129466	Bahamas	Bimini Is.	Gun Cay		8.7
Cassis tuberosa	188076	Cuba	Guantanamo	Fundadora		8.9
Cassis tuberosa	188076	Cuba	Guantanamo	Fundadora		9.4
Cassis tuberosa	11390	FL	Broward	Hillsborough Inlet		10.4
Cassis tuberosa	158666	FL	Palm Beach	Lk. Worth		10.5
Cassis tuberosa	173128	Dom. Repub.	Puerto Plata	Puerto Plata		10.6
Cassis tuberosa	128447	Bahamas	South Bimini Is.			10.7
Cassis tuberosa	120946	Puerto Rico	Cabo Rojo	eel grass	3.0	10.9
Cassis tuberosa	196091	FL	Monroe	Molasses Reef		10.9
Cassis tuberosa	128447	Bahamas	South Bimini Is.			11.2
Cassis tuberosa	23533	Bahamas	N. Bimini Is.	near creek		11.6
Cassis tuberosa	11388	FL	Monroe	Key West		11.8
Cassis tuberosa	182617	FL	Broward	Hillsbrough		12
Cassis tuberosa	173129	FL	Palm Beach	Lk. Worth		12.2
Cassis tuberosa	158666	FL	Palm Beach	Lk. Worth		12.3
Cassis tuberosa	173128	Dom. Repub.	Puerto Plata	Puerto Plata		12.6
Cassis tuberosa	21623	Virgin Islands	St. Croix			12.8
Cassis tuberosa	11387	FL	Monroe	Key West		12.9
Cassis tuberosa	11387	FL	Monroe	Key West		13.9
Cassis tuberosa	55555	Bahamas	Cat Is.	NE Point		14
Cassis tuberosa	150556	Brazil	Pernambuco state	Olinda		14
Cassis tuberosa	121326	Bahamas	Eleuthera Is.	turtle grass	0.9	14.3
Cassis tuberosa	124600	Puerto Rico	Caba Rojo	Susia Bay	3.0	14.8
Cassis tuberosa	157701	FL	Palm Beach	Lk. Worth		15.3
Cassis tuberosa	11389	FL	Monroe	Key West		15.5
Cassis tuberosa	11387	FL	Monroe	Key West		15.5
Cassis tuberosa	55553	FL	Monroe	Dry Tortugas		16.1
Cassis tuberosa	11389	FL	Monroe	Key West		16.2
Cassis tuberosa	11387	FL	Monroe	Key West		16.3
Cassis tuberosa	11385	Bahamas				16.8
Cassis tuberosa	11389	FL	Monroe	Key West		16.8
Cassis tuberosa	11388	FL	Monroe	Long Reef		17

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Cassis tuberosa	11387	FL	Monroe	Key West		17.1
Cassis tuberosa	11387	FL	Monroe	Key West		17.2
Cassis tuberosa	11389	FL	Monroe	Key West		17.3
Cassis tuberosa	11387	FL	Monroe	Key West		17.3
Cassis tuberosa	203065	Bahamas	N. Bimini Is.	Alicetown		17.3
Cassis tuberosa	261	FL	Palm Beach	Boynton Inlet		17.4
Cassis tuberosa	169498	Bahamas	Berry Iss.	Chub Cay		17.6
Cassis tuberosa	11389	FL	Monroe	Key West		17.7
Cassis tuberosa	11386	FL	Lee	Captiva		17.8
Cassis tuberosa	55554	Bahamas	Cat Is.	Arthurstown		17.9
Cassis tuberosa	203064	FL	Palm Beach	Lk. Worth		19.6
Cassis tuberosa	11388	FL	Monroe	Long Reef		21.1
Cassis tuberosa	21623	Virgin Is.	St. Croix			22.6
Cassis tuberosa	120201	Bahamas				27.4
Charonia variegata	142880	FL	Palm Beach	Palm Beach	45.7	0.8
Charonia variegata	162700	Puerto Rico	Arecibo			0.9
Charonia variegata	162700	Puerto Rico	Arecibo			1
Charonia variegata	162700	Puerto Rico	Arecibo			1.5
Charonia variegata	142883	Tobago Is.	Buccoo Reef			1.7
Charonia variegata	196209	FL	Monroe	Key Largo		1.8
Charonia variegata	154906	FL	Monroe	Key West		1.8
Charonia variegata	142881	Bahamas	New Providence			1.9
Charonia variegata	157289	FL	Broward	Pompano Bch. fill	18.3	2.1
Charonia variegata	12319	FL	Monroe	Key West		2.3
Charonia variegata	150906	FL	Palm Beach	Lk. Worth		2.4
Charonia variegata	162700	Puerto Rico	Arecibo			2.5
Charonia variegata	176619	Bahamas	Bimini Is.	South Cat Cay	3.0	2.7
Charonia variegata	142883	Tobago Is.	Buccoo Reef			2.8
Charonia variegata	154907	FL	Monroe	Pelican Shoals		2.8
Charonia variegata	123099	FL	Monroe	Looe Key	0.6	3.3
Charonia variegata	18012	Virgin Is.	St. Croix			4.5
Charonia variegata	142883	Tobago Is.	Buccoo Reef			4.8
Charonia variegata	120967	FL	Palm Beach	Boca Raton	15.2	6.7
Charonia variegata	123099	FL	Monroe	Looe Key	0.6	6.7
Charonia variegata	142882	FL	Monroe	Key West		7.5
Charonia variegata	142878	Dominica Is.	Soufriere		45.7	8.3
Charonia variegata	128492	FL	Palm Beach	Palm Bch. Inlet		8.7
Charonia variegata	193259	FL	Monroe	Mangrove Key		8.8
Charonia variegata	123099	FL	Monroe	Looe Key	0.6	9.4
Charonia variegata	142879	Dominica Is.	Soufriere		18.3	9.5
Charonia variegata	193260	FL	Monroe	Boca Ciega Bay		9.8
Charonia variegata	120966	Haiti	Dept. Du Nord	Cap Haitien		11
Charonia variegata	153178	FL	Monroe	Key West		11.3
Charonia variegata	21407	Puerto Rico	Arecibo Dist.	Arecibo		11.7
Charonia variegata	197424	FL	Monroe	Key Largo		11.7
Charonia variegata	153179	Dominica Is.	Soufriere		45.7	12.3
Charonia variegata	227270	Trinidad/Tobago	St. Giles Is.			12.6

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Charonia variegata	197423	FL	Monroe	Pelican Shoals		13.4
Charonia variegata	37915	Jamaica	Montego Bay	Bogue Is.		14.5
Charonia variegata	182266	Jamaica	Kingston	Lime Cay		14.9
Charonia variegata	171490	Dom Repub.	Santo Domingo			15.6
Charonia variegata	173146	Dom. Repub.	Puerto Plata			16.6
Charonia variegata	12599	FL	Broward	Pompano Reef	7.6	16.7
Charonia variegata	169003	Dom Repub.	Puerto Plata			17.1
Charonia variegata	153243	Dominica Is.	Soufriere		18.3	17.2
Charonia variegata	57217	Dom Repub.	Tosua Bay			17.2
Charonia variegata	12320	Cuba	Matanzas			17.4
Charonia variegata	169199	Dom Repub.	Puerto Plata Prov.	Puerto Plata		18.6
Charonia variegata	12606	FL	Monroe	Key West		18.7
Charonia variegata	153244	Cuba	Holguin Prov.	Gibara	146.3	18.9
Charonia variegata	173146	Dom. Repub.	Puerto Plata			19
Charonia variegata	12603	FL	Monroe	Key West		19.5
Charonia variegata	57217	Dom Repub.	Tosua Bay			19.6
Charonia variegata	57216	Bahamas	Cat Is.			19.6
Charonia variegata	169003	Dom Repub.	Puerto Plata			19.7
Charonia variegata	12598	FL	Monroe	Key West		20.3
Charonia variegata	12607	FL	Monroe	Crawl Fish Key		21.2
Charonia variegata	169494	FL	Monroe	Indian Key		21.2
Charonia variegata	157702	Bahamas	Berry Is.			22.7
Charonia variegata	12604	FL	Monroe	Key West		26.3
Charonia variegata	169495	Bahamas	Bimini Is.	N. Bimini Is.		27
Charonia variegata	12604	FL	Monroe	Key West		27.8
Charonia variegata	12601	FL	Monroe	Key West		27.8
Charonia variegata	12601	FL	Monroe	Key West		28
Charonia variegata	12605	FL	Monroe	Boca Ciega		28.1
Cymatium femorale	18010	Virgin Is.	St. Croix			2
Cymatium femorale	163911	Puerto Rico				2.1
Cymatium femorale	151134	Virgin Is.	St. Croix	Altona Bay		2.4
Cymatium femorale	151134	Virgin Is.	St. Croix	Altona Bay		2.5
Cymatium femorale	163911	Puerto Rico				2.6
Cymatium femorale	163816	Puerto Rico	Bramadero	S. of Mayaguez		2.6
Cymatium femorale	154846	Bahamas	New Providence	Nassau Harbor		2.7
Cymatium femorale	164629	Bahamas	Bimini Is.	Cat Cay		2.7
Cymatium femorale	157287	FL	Broward	Pompano Bch. fill	18.3	3
Cymatium femorale	151134	Virgin Is.	St. Croix	Altona Bay		3.1
Cymatium femorale	157287	FL	Broward	Pompano Bch. fill	18.3	3.1
Cymatium femorale	163817	Puerto Rico	Punta Guanajibo			3.2
Cymatium femorale	163818	Puerto Rico	Bahia Bramadero			3.2
Cymatium femorale	163911	Puerto Rico				3.3
Cymatium femorale	11527	Virgin Is.	St. Croix			3.6
Cymatium femorale	151134	Virgin Is.	St. Croix	Altona Bay		3.6
Cymatium femorale	164629	Bahamas	Bimini Is.	Cat Cay		3.8
Cymatium femorale	154845	Bahamas	Athol Is.	NW side		3.9
Cymatium femorale	151134	Virgin Is.	St. Croix	Altona Bay		3 9

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Cymatium femorale	163817	Puerto Rico	Punta Guanajibo			4
Cymatium femorale	163816	Puerto Rico	Bramadero	S. of Mayaguez		4.1
Cymatium femorale	11531	FL	Brevard	Melbourne		4.3
Cymatium femorale	164629	Bahamas	Bimini Is.	Cat Cay		4.3
Cymatium femorale	163818	Puerto Rico	Bahia Bramadero			4.4
Cymatium femorale	163818	Puerto Rico	Bahia Bramadero			4.5
Cymatium femorale	57499	Virgin Is.	St. Croix			4.7
Cymatium femorale	163911	Puerto Rico				4.8
Cymatium femorale	128734	FL	Monroe	Key Vaca		5.2
Cymatium femorale	11527	Virgin Is.	St. Croix			5.2
Cymatium femorale	151131	Bahamas	Andros Is.	Pigeon Cays		5.3
Cymatium femorale	233502	FL	Monroe	Virginia Key		5.6
Cymatium femorale	151132	Virgin Is.	St. Croix	Frederiksted		5.7
Cymatium femorale	157287	FL	Broward	Pompano Beh. fill	18.3	5.8
Cymatium femorale	151133	Dominica	Soufriere			5.8
Cymatium femorale	121085	Puerto Rico	Seven Seas Bay		3.7	5.9
Cymatium femorale	122063	Cuba	Habana Prov.	Playa Beach		6
Cymatium femorale	128124	Bahamas	Grand Cay		3.0	6.1
Cymatium femorale	176177	Bahamas	Bimini Is.	near Cat Cay		6.2
Cymatium femorale	11527	Virgin Is.	St. Croix			6.4
Cymatium femorale	121085	Puerto Rico	Seven Seas Bay		3.7	6.5
Cymatium femorale	163816	Puerto Rico	Bramadero	S. of Mayaguez		6.6
Cymatium femorale	163911	Puerto Rico				6.6
Cymatium femorale	23415	Bahamas	N. Bimini Is.			7.8
Cymatium femorale	163818	Puerto Rico	Bahia Bramadero			7.9
Cymatium femorale	163911	Puerto Rico				7.9
Cymatium femorale	56463	Cuba	Oriente Prov.	Manzanillo		8.1
Cymatium femorale	191663	FL	Dade	Miami		8.9
Cymatium femorale	170761	Dom. Repub.	Puerto Plata Prov.	Puerto Plata		9
Cymatium femorale	37445	Jamaica	St. James Paris	Montego Bay		9.4
Cymatium femorale	57498	Virgin Is.	St. Croix			9.5
Cymatium femorale	163816	Puerto Rico	Bramadero	S. of Mayaguez		9.5
Cymatium femorale	153166	Bahamas	New Providence	Ft. Montague Point		9.6
Cymatium femorale	153164	FL	Monroe	off Marathon		9.6
Cymatium femorale	57295	Dom. Repub.				9.6
Cymatium femorale	37445	Jamaica	St. James Paris	Montego Bay		10.1
Cymatium femorale	163818	Puerto Rico	Bahia Bramadero			10.2
Cymatium femorale	57498	Virgin Is.	St. Croix			10.5
Cymatium femorale	233513	FL	Dade	Biscayne Bay		10.5
Cymatium femorale	21596	Veracruz		Palma Sola		10.6
Cymatium femorale	121084	Bahamas	Abaco Is.	Green Turtle Cay	2.4	10.7
Cymatium femorale	37445	Jamaica	St. James Paris	Montego Bay		10.8
Cymatium femorale	21410	FL	Monroe	Marquesas		11.1
Cymatium femorale	163817	Puerto Rico	Punta Guanajibo			11.6
Cymatium femorale	57498	Virgin Is.	St. Croix			11.6
Cymatium femorale	121081	Puerto Rico	Seven Seas Bay		3.7	11.8
Cymatium femorale	57295	Dom. Repub.				11.9

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Cymatium femorale	163818	Puerto Rico	Bahia Bramadero			11.9
Cymatium femorale	233459	FL	Dade	Biscayne Bay		12.5
Cymatium femorale	169735	FL	Dade	Biscayne Bay		12.9
Cymatium femorale	173135	Bahamas	Berry Is.			12.9
Cymatium femorale	153166	Bahamas	New Providence	Ft. Montague Point		13.2
Cymatium femorale	193277	FL	Monroe	Key West		13.9
Cymatium femorale	57498	FL	Monroe	Key West		14.2
Cymatium femorale	153165	FL	Dade	Miami		14.3
Cymatium femorale	196086	Suriname	Suriname River		51.2	14.6
Cymatium femorale	191976	Bahamas	New Providence	NW side		14.6
Cymatium femorale	129505	FL	Dade	Miami		14.7
Cymatium femorale	129506	FL	Dade	Miami		15.2
Cymatium femorale	173135	Bahamas	Berry Is.			15.3
Cymatium femorale	128734	FL	Monroe	Key Vaca		15.3
Cymatium femorale	78767	Honduras	Bogas Cay	Cayos Vivonilles		15.9
Cymatium femorale	124094	Puerto Rico				16
Cymatium femorale	2517	FL	Monroe	Key West	5.5	16.1
Cymatium femorale	125174	Brazil	Recife	Boa Viagem Beach		16.8
Cymatium femorale	153267	FL	Monroe	Little Duck Key		16.9
Cymatium femorale	174019	FL	Monroe	Key West		17.3
Pleuroploca gigantea	156293	FL	Okaloosa	Destin		0.6
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		0.7
Pleuroploca gigantea	165033	FL	Dade	Biscayne Bay		1
Pleuroploca gigantea	156293	FL	Okaloosa	Destin		1
Pleuroploca gigantea	135643	FL	Palm Beach	Lk. Worth		1.2
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		1.2
Pleuroploca gigantea	135643	FL	Palm Beach	Lk. Worth		1.2
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		1.2
Pleuroploca gigantea	135643	FL	Palm Beach	Lk. Worth		1.3
Pleuroploca gigantea		FL	Collier	Gordon's Pass		1.3
Pleuroploca gigantea	135643	FL	Palm Beach	Lk. Worth		1.3
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		1.3
Pleuroploca gigantea		FL	Collier	Gordon's Pass		1.3
Pleuroploca gigantea	127120	FL	Collier	Marco Is.		1.4
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		1.4
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		1.5
Pleuroploca gigantea	135643	FL	Palm Beach	Lk. Worth		1.5
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		1.6
Pleuroploca gigantea	171171	FL	Collier	Naples	32.9	1.7
Pleuroploca gigantea	135643	FL	Palm Beach	Lk. Worth		1.7
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		2
Pleuroploca gigantea	57023	FL	Palm Beach	Lk. Worth		2
Pleuroploca gigantea	57023	FL	Palm Beach	Lk. Worth		2
Pleuroploca gigantea	8567	FL	Sarasota	Sarasota Bay		2.1
Pleuroploca gigantea	18717	FL	Lee	Sanibel Is.		2.1
Pleuroploca gigantea	121027	FL	Pinellas	St. Pete. Bch.	6.1	2.2
Pleuroploca gigantea	135643	FL	Palm Beach	Lk. Worth		2.2

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Pleuroploca gigantea	121027	FL	Pinellas	St. Pete. Bch.	6.1	2.3
Pleuroploca gigantea	121027	FL	Pinellas	St. Pete. Bch.	6.1	2.3
Pleuroploca gigantea	203485	FL	Palm Beach	Palm Beach Inlet		2.3
Pleuroploca gigantea	171171	FL	Collier	Naples	32.9	2.3
Pleuroploca gigantea	8548	FL	Collier	Marco Is.		2.3
Pleuroploca gigantea	1770	FL	Lee	Captiva Is.		2.4
Pleuroploca gigantea	8548	FL	Collier	Marco Is.		2.4
Pleuroploca gigantea	8548	FL	Collier	Marco Is.		2.4
Pleuroploca gigantea	127120	FL	Collier	Marco Is.		2.5
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		2.5
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		2.5
Pleuroploca gigantea	1770	FL	Lee	Captiva Is.		2.6
Pleuroploca gigantea	165033	FL	Dade	Biscayne Bay		2.6
Pleuroploca gigantea	18717	FL	Lee	Sanibel Is.		2.6
Pleuroploca gigantea	57023	FL	Palm Beach	Lk. Worth		2.7
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		2.7
Pleuroploca gigantea	8548	FL	Collier	Marco Is.		2.8
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		2.9
Pleuroploca gigantea	1770	FL	Lee	Captiva Is.		2.9
Pleuroploca gigantea	1770	FL	Lee	Captiva Is.		2.9
Pleuroploca gigantea	235124	FL	Lee	Sanibel Is.		3
Pleuroploca gigantea	135643	FL	Palm Beach	Lk. Worth		3
Pleuroploca gigantea	8548	FL	Collier	Marco Is.		3.1
Pleuroploca gigantea	121027	FL	Pinellas	St. Pete. Bch.	6.1	3.1
Pleuroploca gigantea	135643	FL	Palm Beach	Lk. Worth		3.1
Pleuroploca gigantea	1770	FL	Lee	Captiva Is.		3.2
Pleuroploca gigantea	8548	FL	Collier	Marco Is.		3.4
Pleuroploca gigantea	8548	FL	Collier	Marco Is.		3.5
Pleuroploca gigantea		FL	Collier	Gordon's Pass		3.5
Pleuroploca gigantea	8548	FL	Collier	Marco Is.		3.6
Pleuroploca gigantea	18717	FL	Lee	Sanibel Is.		3.6
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		3.8
Pleuroploca gigantea	157655	FL	Broward	Pompano Bch. fill		3.8
Pleuroploca gigantea	156292	FL	Okaloosa	Destin		3.8
Pleuroploca gigantea	170718	FL	Lee	Sanibel Is.		3.9
Pleuroploca gigantea	8549	FL	Sarasota	Sarasota Bay		4
Pleuroploca gigantea	18717	FL	Lee	Sanibel Is.		4
Pleuroploca gigantea	169882	FL	Palm Beach	Lk. Worth		4.1
Pleuroploca gigantea	135643	FL	Palm Beach	Lk. Worth		4.2
Pleuroploca gigantea	8568	FL	Monroe	Money Key		4.3
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		4.6
Pleuroploca gigantea	169882	FL	Palm Beach	Lk. Worth		4.7
Pleuroploca gigantea	120823	FL	Pinellas	Boca Ciega Bay	0.3	4 8
Pleuroploca gigantea	1770	FL	Lee	Captiva Is.		4.8
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		5
Pleuroploca gigantea	169882	FL	Palm Beach	Lk. Worth		5
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		5.2

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Pleuroploca gigantea	181590	FL	Palm Beach	Lk. Worth		5.3
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		5.4
Pleuroploca gigantea	169882	FL	Palm Beach	Lk. Worth		5.4
Pleuroploca gigantea	8570	FL	Collier	Naples		5.4
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		5.5
Pleuroploca gigantea	8568	FL	Monroe	Money Key		5.6
Pleuroploca gigantea		Yucatan	Campeche	Osla Aguada		5.6
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		5.8
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		5.8
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		6.2
Pleuroploca gigantea	285	FL	Palm Beach	Lk. Worth		6.3
Pleuroploca gigantea	169882	FL	Palm Beach	Lk. Worth		6.3
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		6.4
Pleuroploca gigantea	57026	FL	Lee	Sanibel Is.		6.5
Pleuroploca gigantea	123949	FL	Pinellas	Bellaire Causeway		6.5
Pleuroploca gigantea	121025	FL	Lee	Pine Is. Sound		6.6
Pleuroploca gigantea	181589	FL	Palm Beach	Lk. Worth		6.8
Pleuroploca gigantea	120823	FL	Pinellas	Boca Ciega Bay	0.3	6.9
Pleuroploca gigantea	235124	FL	Lee	Sanibel Is.		6.9
Pleuroploca gigantea	8568	FL	Monroe	Money Key		7
Pleuroploca gigantea	169882	FL	Palm Beach	Lk. Worth		7
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		7.1
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		7.1
Pleuroploca gigantea	235124	FL	Lee	Sanibel Is.		7.2
Pleuroploca gigantea	8594	FL	Monroe			7.3
Pleuroploca gigantea	2342	FL	Lee	Estero Is.		7.4
Pleuroploca gigantea	8566	FL	Gulf	St. Josephs Bay		7.5
Pleuroploca gigantea	57022	FL	Pinellas	Gulfport		7.9
Pleuroploca gigantea	169882	FL	Palm Beach	Lk. Worth		8
Pleuroploca gigantea	169882	FL	Palm Beach	Lk. Worth		8.1
Pleuroploca gigantea	8568	FL	Monroe	Money Key		8.4
Pleuroploca gigantea	8568	FL	Monroe	Money Key		8.4
Pleuroploca gigantea	123962	FL	Pinellas	Indian Rocks Bch.		8.7
Pleuroploca gigantea	120823	FL	Pinellas	Boca Ciega Bay	0.3	8.8
Pleuroploca gigantea	18716	FL	Lee	Sanibel Is.		8.8
Pleuroploca gigantea	235255	FL	Collier	Marco Is.		8.9
Pleuroploca gigantea	2342	FL	Lee	Estero Is.		8.9
Pleuroploca gigantea	169882	FL	Palm Beach	Lk. Worth		9
Pleuroploca gigantea	124649	FL	Lee	Sanibel Is.		9.3
Pleuroploca gigantea	2342	FL	Lee	Estero Is.		9.5
Pleuroploca gigantea	122827	FL	Collier	Naples		9.6
Pleuroploca gigantea	25232	FL	Sarasota	Casey Key		9.6
Pleuroploca gigantea	124472	FL	Levy	Cedar Key		9.6
Pleuroploca gigantea	127343	FL	Monroe	Ohio Key		9.8
Pleuroploca gigantea	123962	FL	Pinellas	Indian Rocks Bch.		9.8
Pleuroploca gigantea	124650	FL	Pinellas	Bellaire Causeway		9.9
Pleuroploca gigantea	125754	FL	Franklin	Alligator Pt.		10

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Pleuroploca gigantea	8568	FL	Monroe	Money Key		10.2
Pleuroploca gigantea	25232	FL	Sarasota	Casey Key		10.2
Pleuroploca gigantea	8569	FL	Lee	Estero Is		10.3
Pleuroploca gigantea	2342	FL	Lee	Estero Is		10.4
Pleuroploca gigantea	124651	FL	Monroe	Russell Key		10.5
Pleuroploca gigantea	168993	FL	Palm Beach	Lk. Worth		10.6
Pleuroploca gigantea	25232	FL	Sarasota	Casey Key		10.6
Pleuroploca gigantea	297	FL	Palm Beach	Lk. Worth		10.8
Pleuroploca gigantea	2342	FL	Lee	Estero Is.		11.1
Pleuroploca gigantea	168993	FL	Palm Beach	Lk. Worth		11.2
Pleuroploca gigantea	2014	FL	Pinellas	Boca Ciega Bay		11.3
Pleuroploca gigantea	124472	FL	Levy	Cedar Key		11.4
Pleuroploca gigantea	8547	FL	Dade	Biscayne Bay		11.5
Pleuroploca gigantea	2014	FL	Pinellas	Boca Ciega Bay		11.7
Pleuroploca gigantea	181590	FL	Palm Beach	Lk. Worth		11.8
Pleuroploca gigantea	8550	FL	Lee	Sanibel Is.		12
Pleuroploca gigantea	124651	FL	Monroe	Russell Key		12.1
Pleuroploca gigantea	181590	FL	Palm Beach	Lk. Worth		12.3
Pleuroploca gigantea	181588	FL	Lee	Sanibel Is.		12.5
Pleuroploca gigantea	128405	FL	Monroe	Vaca Key		12.5
Pleuroploca gigantea		FL	Lee	Sanibel Is.		12.6
Pleuroploca gigantea	8594	FL	Monroe			13.1
Pleuroploca gigantea	124651	FL	Monroe	Russell Key		13.1
Pleuroploca gigantea	6918	FL	Monroe	shrimp trawl		13.3
Pleuroploca gigantea	124651	FL	Monroe	Russell Key		13.3
Pleuroploca gigantea	181706	FL	Monroe	Soldier Key		13.7
Pleuroploca gigantea	181589	FL	Palm Beach	Lk. Worth		13.8
Pleuroploca gigantea	168993	FL	Palm Beach	Lk. Worth		13.8
Pleuroploca gigantea	168993	FL	Palm Beach	Lk. Worth		14
Pleuroploca gigantea	8566	FL	Gulf	St. Josephs Bay		14.5
Pleuroploca gigantea	8571	FL	Monroe	Dry Tortugas		14.6
Pleuroploca gigantea	182614	FL	Lee	Sanibel Is.		14.6
Pleuroploca gigantea	8581	FL	Lee	Estero Is.		15
Pleuroploca gigantea	168993	FL	Palm Beach	Lk. Worth		15.2
Pleuroploca gigantea	124471	FL	Monroe	Vaca Key		15.7
Pleuroploca gigantea	142397	FL	Pinellas	Boca Ciega Bay		16.2
Pleuroploca gigantea	124471	FL	Monroe	Vaca Key		16.7
Pleuroploca gigantea	220367	FL	Monroe	Cape Florida		17.1
Pleuroploca gigantea	169190	FL	Monroe	Grassy Key		17.3
Pleuroploca gigantea	27307	FL	Manatee	Bradenton		17.4
Pleuroploca gigantea	8581	FL	Lee	Estero Is.		17.5
Pleuroploca gigantea	181706	FL	Monroe	Soldier Key		17.6
Pleuroploca gigantea	8554	FL	Lee	Sanibel Is.		18
Pleuroploca gigantea	8563	FL	Monroe	Dry Tortugas		18.4
Pleuroploca gigantea	182614	FL	Lee	Sanibel Is.		18.9
Pleuroploca gigantea	187355	FL	Monroe	Missouri Key		19
Pleuroploca gigantea	8554	FL	Lee	Sanibel Is.		19.1

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Pleuroploca gigantea	25232	FL	Sarasota	Casey Key		19.6
Pleuroploca gigantea	128401	FL	Collier	Marco Is.		19.6
Pleuroploca gigantea	129481	FL	Monroe	Miami	4.6	19.7
Pleuroploca gigantea	168993	FL	Palm Beach	Lk. Worth		19.7
Pleuroploca gigantea	132055	FL	Sarasota	Midnight Pass		20.2
Pleuroploca gigantea	174738	FL	Lee	Ft. Myers		20.8
Pleuroploca gigantea	182614	FL	Lee	Sanibel Is.		21.1
Pleuroploca gigantea	8564	FL	Gulf	St. Joseph Bay		21.2
Pleuroploca gigantea	8554	FL	Lee	Sanibel Is.		21.3
Pleuroploca gigantea	8566	FL	Gulf	St. Josephs Bay		21.4
Pleuroploca gigantea	8565	FL	Monroe	Dry Tortugas	1.2	22.3
Pleuroploca gigantea	8564	FL	Gulf	St. Joseph Bay		22.4
Pleuroploca gigantea	8551	FL	Sarasota	Sarasota		23.9
Pleuroploca gigantea	198027	FL	Lee	Ft. Myers Bch.		24.7
Pleuroploca gigantea	8562	FL	Monroe	Money Key		25.3
Pleuroploca gigantea	12594	FL	St. Johns	St. Augustine		25.4
Pleuroploca gigantea	8553	FL	Monroe	Snipe Key		26.9
Pleuroploca gigantea	8554	FL	Lee	Sanibel Is.		27.9
Pleuroploca gigantea	173142	FL	Palm Beach	Lk. Worth		28.1
Pleuroploca gigantea	8578	FL	Pinellas	Boca Ciega Bay		29.1
Pleuroploca gigantea	57025	FL	Sarasota	Sarasota Bay		29.1
Pleuroploca gigantea	8564	FL	Gulf	St. Joseph Bay		29.4
Pleuroploca gigantea	182613	FL	Monroe	Marathon Key		30.3
Pleuroploca gigantea	8561	FL	Monroe	Dry Tortugas		30.8
Pleuroploca gigantea	8561	FL	Monroe	Dry Tortugas		31.6
Pleuroploca gigantea	8564	FL	Gulf	St. Joseph Bay		32
Pleuroploca gigantea	25232	FL	Sarasota	Casey Key		32.1
Pleuroploca gigantea	57006	Yucatan	Campeche			32.1
Pleuroploca gigantea	8562	FL	Monroe	Money Key		32.5
Pleuroploca gigantea	25232	FL	Sarasota	Casey Key		32.6
Pleuroploca gigantea	8561	FL	Monroe	Dry Tortugas		32.6
Pleuroploca gigantea	8576	FL	Lee	Marco Is.		33.2
Pleuroploca gigantea	8577	FL	St. Lucie	St. Lucie River		33.3
Pleuroploca gigantea	8579	FL	Collier	Big Marco Pass		34.5
Pleuroploca gigantea	8552	FL	Levy	Cedar Key		35.1
Pleuroploca gigantea	8554	FL	Lee	Sanibel Is.		35.5
Pleuroploca gigantea	129465	FL	Dade	Miami		37.5
Pleuroploca gigantea	8554	FL	Lee	Sanibel Is.		38.1
Pleuroploca gigantea	182612	FL	Palm Beach	Lk. Worth		38.6
Pleuroploca gigantea	8559	FL	Monroe	May Key		39.5
Pleuroploca gigantea	8560	FL	Monroe	Boca Grande Key		40.1
Pleuroploca gigantea	8573	FL	Palm Beach	Palm Beach		41
Pleuroploca gigantea	8556	FL	Monroe	Man key		41.6
Pleuroploca gigantea	203051	Bahamas	Crooked Is.			42.5
Pleuroploca gigantea	8558	FL	Monroe	Woman's Key		42.7
Pleuroploca gigantea	8572	FL	Monroe	Woman Key		43.6
Pleuroploca gigantea	132776	FL	Lee	Captiva		44.2

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Pleuroploca gigantea	8554	FL	Lee	Sanibel Is.		44.2
Pleuroploca gigantea	8555	FL	Monroe	Dry Tortugas		45.2
Pleuroploca gigantea	8574	FL	Sarasota	Casey Key		45.4
Pleuroploca gigantea	8575	FL	Pinellas	Boca Ciega Bay		46.4
Pleuroploca gigantea	8555	FL	Sarasota	Casey Key		46.8
Pleuroploca gigantea	8580	FL	Monroe	American Flat		47.6
Pleuroploca gigantea	25233	FL	Monroe	Key West		48.3
Pleuroploca gigantea	8557	FL	Monroe	Boca Grande Key		48.5
Pleuroploca gigantea	8557	FL	Monroe	Boca Grande Key		48.6
Pleuroploca gigantea	8551	FL	Sarasota	Sarasota		49.1
Strombus gigas	10765	FL	Monroe	Dry Tortugas		0.5
Strombus gigas	10765	FL	Monroe	Dry Tortugas		1.2
Strombus gigas	157721	FL	Broward	Pompano Bch fill		1.2
Strombus gigas	10765	FL	Monroe	Dry Tortugas		1.2
Strombus gigas	157721	FL	Broward	Pompano Bch fill		1.6
Strombus gigas	163099	Bahamas	San Salvador	Cockburn Town		1.7
Strombus gigas	157721	FL	Broward	Pompano Bch fill		1.7
Strombus gigas	157721	FL	Broward	Pompano Bch fill		1.7
Strombus gigas	151424	FL	Palm Beach	n end of Lk. Worth		1.9
Strombus gigas	157721	FL	Broward	Pompano Bch fill		1.9
Strombus gigas	123713	FL	Monroe	off Key West		2.2
Strombus gigas	236859	Virgin Is.	Virgin Gorda	Little Dix Bay		2.3
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		2.4
Strombus gigas	157721	FL	Broward	Pompano Bch fill		2.4
Strombus gigas	236859	Virgin Is.	Virgin Gorda	Little Dix Bay		2.8
Strombus gigas	151424	FL	Palm Beach	n end of Lk. Worth		2.9
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		3
Strombus gigas	163100	Puerto Rico		Rincon Lighthouse		3
Strombus gigas	236859	Virgin Is.	Virgin Gorda	Little Dix Bay		3
Strombus gigas	151424	FL	Palm Beach	n end of Lk. Worth		3.2
Strombus gigas	18857	Virgin Is.	St. Croix			3.4
Strombus gigas	151424	FL	Palm Beach	n end of Lk. Worth		3.4
Strombus gigas	18857	Virgin Is.	St. Croix			3.6
Strombus gigas	163100	Puerto Rico		Rincon Lighthouse		3.6
Strombus gigas	163100	Puerto Rico		Rincon Lighthouse		3.7
Strombus gigas	163100	Puerto Rico		Rincon Lighthouse		3.8
Strombus gigas	18857	Virgin Is.	St. Croix			3.8
Strombus gigas	151426	FL	Palm Beach	Lk. Worth		3.9
Strombus gigas	151426	FL	Palm Beach	Lk. Worth		3.9
Strombus gigas	163100	Puerto Rico		Rincon Lighthouse		3.9
Strombus gigas	123741	Puerto Rico	Arecibo			4
Strombus gigas	18857	Virgin Is.	St. Croix			4
Strombus gigas	294	FL	Palm Beach	Upper Lk. Worth		4.1
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		4.1
Strombus gigas	163099	Bahamas	San Salvador	Cockburn Town		4.2
Strombus gigas	18857	Virgin Is.	St. Croix			4.4
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		4.5

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Strombus gigas	127106	FL	Palm Beach	Boca Raton		4.6
Strombus gigas	18857	Virgin Is.	St. Croix			4.7
Strombus gigas	163099	Bahamas	San Salvador	Cockburn Town		4.7
Strombus gigas	163099	Bahamas	San Salvador	Cockburn Town		4.8
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		4.8
Strombus gigas	174023	FL	Palm Beach	Lk. Worth		4.8
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		4.8
Strombus gigas	151426	FL	Palm Beach	Lk. Worth		4.8
Strombus gigas	151426	FL	Palm Beach	Lk. Worth		4.9
Strombus gigas	163099	Bahamas	San Salvador	Cockburn Town		4.9
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.1
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.1
Strombus gigas	18857	Virgin Is.	St. Croix			5.1
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.2
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.2
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.3
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.4
Strombus gigas	18857	Virgin Is.	St. Croix			5.4
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.4
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.4
Strombus gigas	163100	Puerto Rico		Rincon Lighthouse		5.4
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.5
Strombus gigas	18857	Virgin Is.	St. Croix			5.6
Strombus gigas	294	FL	Palm Beach	Upper Lk. Worth		5.6
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.6
Strombus gigas	163099	Bahamas	San Salvador	Cockburn Town		5.6
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		5.7
Strombus gigas	151424	FL	Palm Beach	n end of Lk. Worth		5.7
Strombus gigas	236859	Virgin Is.	Virgin Gorda	Little Dix Bay		5.7
Strombus gigas	18857	Virgin Is.	St. Croix			5.7
Strombus gigas	315	FL	Palm Beach	Upper Lk. Worth		5.8
Strombus gigas	163100	Puerto Rico		Rincon Lighthouse		5.9
Strombus gigas	123741	Puerto Rico	Arecibo			5.9
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		6
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		6
Strombus gigas	174023	FL	Palm Beach	Lk. Worth		6.1
Strombus gigas	18857	Virgin Is.	St. Croix			6.1
Strombus gigas	236859	Virgin Is.	Virgin Gorda	Little Dix Bay		6.2
Strombus gigas	294	FL	Palm Beach	Upper Lk. Worth		6.3
Strombus gigas	294	FL	Palm Beach	Upper Lk. Worth		6.4
Strombus gigas	18857	Virgin Is.	St. Croix			6.5
Strombus gigas	18857	Virgin Is.	St. Croix			6.5
Strombus gigas	151427	Bahamas	Andros Is.	Pigeon Cays		6.6
Strombus gigas	151426	FL	Palm Beach	Lk. Worth		6 6
Strombus gigas	123713	FL	Monroe	off Key West		6.7
Strombus gigas	8592	FL	Monroe	Dry Tortugas		6.7

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Strombus gigas	18857	Virgin Is.	St. Croix			6.8
Strombus gigas	212383	Dom. Republic	Salina			7
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		7
Strombus gigas	187335	FL	Palm Beach	Lantana		7.2
Strombus gigas	174015	FL	Palm Beach	Lk. Worth		7.3
Strombus gigas	151428	FL	Monroe	off Key Largo		7.3
Strombus gigas	151424	FL	Palm Beach	n end of Lk. Worth		7.4
Strombus gigas	18857	Virgin Is.	St. Croix			7.5
Strombus gigas	151424	FL	Palm Beach	n end of Lk. Worth		7.5
Strombus gigas	8592	FL	Monroe	Dry Tortugas		7.5
Strombus gigas	8592	FL	Monroe	Dry Tortugas		7.5
Strombus gigas	18857	Virgin Is.	St. Croix			7.8
Strombus gigas	25238	FL	Monroe	Key West		7.8
Strombus gigas	18857	Virgin Is.	St. Croix			8.1
Strombus gigas	8592	FL	Monroe	Dry Tortugas		8.1
Strombus gigas	123713	FL	Monroe	off Key West		8.1
Strombus gigas	123715	FL	Monroe	Pacet Key		8.3
Strombus gigas	163098	Bonaire				8.4
Strombus gigas	163097	Virgin Is.	Salt Is.			8.4
Strombus gigas	18857	Virgin Is.	St. Croix			8.6
Strombus gigas	10769	FL	Dade	Biscayne Bay		8.8
Strombus gigas	174023	FL	Palm Beach	Lk. Worth		8.9
Strombus gigas	123712	Bahamas	Eleuthera			9.2
Strombus gigas	174015	FL	Palm Beach	Lk. Worth		9.3
Strombus gigas	151425	FL	Monroe	Key West		9.5
Strombus gigas	174015	FL	Palm Beach	Lk. Worth		9.5
Strombus gigas	192179	FL	Palm Beach	Boynton Inlet		10
Strombus gigas	129491	FL	Dade	Miami		10
Strombus gigas	8592	FL	Monroe	Dry Tortugas		10
Strombus gigas	18857	Virgin Is.	St. Croix			10.3
Strombus gigas	158203	FL	Palm Beach	Boynton		10.8
Strombus gigas	294	FL	Palm Beach	Upper Lk. Worth		10.8
Strombus gigas	127338	FL	Dade	Miami		11
Strombus gigas	18857	Virgin Is.	St. Croix			11.1
Strombus gigas	123714	FL	Monroe	Bahia Honda Key	0.3	11.1
Strombus gigas	17517	FL	Monroe	Big Pine Key		11.3
Strombus gigas	123715	FL	Monroe	Pacet Key		12.2
Strombus gigas	25238	FL	Monroe	Key West		12.2
Strombus gigas	10766	Virgin Is.	St. Croix			12.4
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		12.4
Strombus gigas	124841	FL	Monroe	Bahia Honda Key		12.5
Strombus gigas	2194	Bahamas	New Providence	Nassau town		12.5
Strombus gigas	192178	FL	Monroe	Bahia Honda Key		12.6
Strombus gigas	25238	FL	Monroe	Key West		12.6
Strombus gigas	129482	FL	Dade	Norris Cut		12.9
Strombus gigas	187335	FL	Palm Beach	Lantana		13
Strombus gigas	11769	FL	Monroe	Dry Tortugas		13.5

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		13.5
Strombus gigas	187335	FL	Palm Beach	Lantana		14
Strombus gigas	25238	FL	Monroe	Key West		14.8
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		14.9
Strombus gigas	8593	FL	Monroe	Dry Tortugas		15.7
Strombus gigas	132424	FL	Monroe	Matacumbe Key		16.1
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		16.1
Strombus gigas	205549	FL	Monroe	Matacumbe Key		16.2
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		16.2
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		16.4
Strombus gigas	174021	FL	Monroe	Soldier Key		17.4
Strombus gigas	8600	FL	Monroe	Flamingo Key		17.6
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		17.6
Strombus gigas	18850	FL	Palm Beach	Palm Beach		17.9
Strombus gigas	8588	FL	Palm Beach	Lk. Worth		18.1
Strombus gigas	25238	FL	Monroe	Key West		18.1
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		18.7
Strombus gigas	174022	Bahamas	Spanish Cay	Gorda Cay		18.9
Strombus gigas	292	FL	Palm Beach	Jupiter Inlet		19
Strombus gigas	8588	FL	Palm Beach	Lk. Worth		19.1
Strombus gigas	174018	FL	Palm Beach	Lk. Worth		19.2
Strombus gigas	8601	FL	Monroe	Marquesas		19.5
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		20
Strombus gigas	171707	FL	Palm Beach	Boca Raton		20
Strombus gigas	18856	FL	Monroe	Key West		20.1
Strombus gigas	8587	FL	Monroe	Flamingo Key		20.3
Strombus gigas	18850	FL	Palm Beach	Palm Beach		20.4
Strombus gigas	205549	FL	Monroe	Matacumbe Key		20.5
Strombus gigas	25238	FL	Monroe	Key West		20.5
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		20.5
Strombus gigas	8601	FL	Monroe	Marquesas		20.7
Strombus gigas	18849	FL	Monroe	Dry Tortugas		20.7
Strombus gigas	8601	FL	Monroe	Marquesas		20.9
Strombus gigas	8601	FL	Monroe	Marquesas		20.9
Strombus gigas	8600	FL	Monroe	Flamingo Key		21
Strombus gigas	129464	FL	Dade	Miami		21
Strombus gigas	173141	FL	Palm Beach	Lk. Worth		21.1
Strombus gigas	8587	FL	Monroe	Flamingo Key		21.1
Strombus gigas	8586	FL	Monroe	Marquesas		21.2
Strombus gigas	171707	FL	Palm Beach	Boca Raton		21.2
Strombus gigas	18850	FL	Palm Beach	Palm Beach		21.3
Strombus gigas	169567	FL	Palm Beach	Lk. Worth		21.3
Strombus gigas	8601	FL	Monroe	Marquesas		21.3
Strombus gigas	171707	FL	Palm Beach	Boca Raton		21.4
Strombus gigas	8603	FL	Monroe	Dry Tortugas		21.4
Strombus gigas	8587	FL	Monroe	Flamingo Key		21.5
Strombus gigas	171707	FL	Palm Beach	Boca Raton		21.6

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Strombus gigas	18849	FL	Monroe	Dry Tortugas		21.6
Strombus gigas	8590	FL	Monroe	Dry Tortugas		21.6
Strombus gigas	205532	FL	Monroe	Key West		21.6
Strombus gigas	171707	FL	Palm Beach	Boca Raton		21.7
Strombus gigas	171707	FL	Palm Beach	Boca Raton		21.8
Strombus gigas	173145	FL	Palm Beach	Lk. Worth		21.8
Strombus gigas	18854	Bahamas				21.9
Strombus gigas	18850	FL	Palm Beach	Palm Beach		21.9
Strombus gigas	182610	FL	Palm Beach	Boca Raton Inlet		22
Strombus gigas	171707	FL	Palm Beach	Boca Raton		22
Strombus gigas	8586	FL	Monroe	Marquesas		22.1
Strombus gigas	171707	FL	Palm Beach	Boca Raton		22.1
Strombus gigas	8586	FL	Monroe	Marquesas		22.2
Strombus gigas	18851	FL	Monroe	Bahia Honda		22.2
Strombus gigas	18849	FL	Monroe	Dry Tortugas		22.3
Strombus gigas	18849	FL	Monroe	Dry Tortugas		22.3
Strombus gigas	129464	FL	Dade	Miami		22.5
Strombus gigas	8601	FL	Monroe	Marquesas		22.5
Strombus gigas	171707	FL	Palm Beach	Boca Raton		22.5
Strombus gigas	8600	FL	Monroe	Flamingo Key		22.5
Strombus gigas	10768	FL	Monroe	Marquesas		22.6
Strombus gigas	205548	FL	Monroe	Key West		22.6
Strombus gigas	171707	FL	Palm Beach	Boca Raton		22.7
Strombus gigas	205531	FL	Monroe	Plantation Key		22.8
Strombus gigas	8587	FL	Monroe	Flamingo Key		22.9
Strombus gigas	129464	FL	Dade	Miami		22.9
Strombus gigas	18851	FL	Monroe	Bahia Honda		23
Strombus gigas	171707	FL	Palm Beach	Boca Raton		23
Strombus gigas	171707	FL	Palm Beach	Boca Raton		23
Strombus gigas	8600	FL	Monroe	Flamingo Key		23
Strombus gigas	8601	FL	Monroe	Marquesas		23.3
Strombus gigas	8602	FL	Monroe	Sisters Keys		23.3
Strombus gigas	173154	FL	St. Lucie	Ft. Pierce		23.5
Strombus gigas	18851	FL	Monroe	Bahia Honda		23.5
Strombus gigas	8588	FL	Palm Beach	Lk. Worth		23.7
Strombus gigas	8593	FL	Monroe	Dry Tortugas		23.8
Strombus gigas	8593	FL	Monroe	Dry Tortugas		24.3
Strombus gigas	25237	FL	Monroe	Key West		24.3
Strombus gigas	59745	Turks & Caicos				24.4
Strombus gigas	173154	FL	St. Lucie	Ft. Pierce		24.5
Strombus gigas	18849	FL	Monroe	Dry Tortugas		24.5
Strombus gigas	8602	FL	Monroe	Sisters Keys		24.6
Strombus gigas	18852	FL	Monroe	Sisters Keys		24.8
Strombus gigas	8589	FL	Monroe	Key West		25.2
Strombus gigas	182611	FL	Monroe	Marathon Key		25.2
Strombus gigas	205530	FL	Monroe	Money Key		25.3
Strombus gigas	8603	FL	Monroe	Dry Tortugas		25.3

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Strombus gigas	169493	FL	Monroe	Missouri Key		25.7
Strombus gigas	205549	FL	Monroe	Matacumbe Key		25.7
Strombus gigas	8591	FL	Monroe	Sisters Keys		25.9
Strombus gigas	8593	FL	Monroe	Dry Tortugas		26.2
Strombus gigas	25238	FL	Monroe	Key West		26.7
Strombus gigas	8591	FL	Monroe	Sisters Keys		27.6
Tonna galea	153394	FL	Palm Beach	Upper Lk. Worth		0.9
Tonna galea	146792	FL	Palm Beach	Boynton Beach		1
Tonna galea	146792	FL	Palm Beach	Boynton Beach		1
Tonna galea	153394	FL	Palm Beach	Upper Lk. Worth		1.1
Tonna galea	172621	FL	Palm Beach	Lk. Worth		1.3
Tonna galea	172621	FL	Palm Beach	Lk. Worth		1.5
Tonna galea	153394	FL	Palm Beach	Upper Lk. Worth		1.6
Tonna galea	172621	FL	Palm Beach	Lk. Worth		1.7
Tonna galea	157611	FL	Palm Beach	Pompano Bch. fill	18.3	1.8
Tonna galea	181547	FL	Palm Beach	Upper Lk. Worth		2.1
Tonna galea	146797	FL	Okaloosa	Destin		2.2
Tonna galea	181544	FL	Palm Beach	Boca Raton Inlet		2.2
Tonna galea	172621	FL	Palm Beach	Lk. Worth		2.3
Tonna galea	172621	FL	Palm Beach	Lk. Worth		2.4
Tonna galea	220653	FL	Palm Beach	Lk. Worth		2.5
Tonna galea	172621	FL	Palm Beach	Lk. Worth		2.5
Tonna galea	172621	FL	Palm Beach	Lk. Worth		2.5
Tonna galea	181548	FL	Monroe	Bahia Honda Key		2.5
Tonna galea	172621	FL	Palm Beach	Lk. Worth		2.6
Tonna galea	172621	FL	Palm Beach	Lk. Worth		2.6
Tonna galea	181542	FL	Monroe	Lower Matecumbe		2.7
Tonna galea	146797	FL	Okaloosa	Destin		2.8
Tonna galea	181544	FL	Palm Beach	Boca Raton Inlet		2.9
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3
Tonna galea	11440	FL	Monroe	Woman's Key		3.1
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.1
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.2
Tonna galea	21603	Veracruz	Palma Sola			3.2
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.3
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.4
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.4
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.4
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.4
Tonna galea	21603	Veracruz	Palma Sola			3.4
Tonna galea	181543	FL	Palm Beach	Upper Lk. Worth		3.5
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.5
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.5
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.5
Tonna galea	181567	FL	Palm Beach	Boca Raton Inlet		3.5
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.6
Tonna galea	21082	FL	Palm Beach	Lk. Worth		3.6

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.6
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.7
Tonna galea	181546	FL	Palm Beach	Lower Lk. Worth		3.7
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.7
Tonna galea	172621	FL	Palm Beach	Lk. Worth		3.8
Tonna galea	181567	FL	Palm Beach	Boca Raton Inlet		3.9
Tonna galea	11438	FL	Monroe	Woman's Key		4
Tonna galea	172621	FL	Palm Beach	Lk. Worth		4
Tonna galea	181544	FL	Palm Beach	Boca Raton Inlet		4
Tonna galea	172621	FL	Palm Beach	Lk. Worth		4
Tonna galea	172621	FL	Palm Beach	Lk. Worth		4.2
Tonna galea	172621	FL	Palm Beach	Lk. Worth		4.2
Tonna galea	172621	FL	Palm Beach	Lk. Worth		4.2
Tonna galea	21082	FL	Palm Beach	Lk. Worth		4.3
Tonna galea	21603	Veracruz	Palma Sola			4.4
Tonna galea	21603	Veracruz	Palma Sola			4.4
Tonna galea	279	FL	Palm Beach	S Lk. Worth		4.5
Tonna galea	114439	FL	Monroe	Marquesas		4.5
Tonna galea	11443	FL	Palm Beach	Boynton		4.7
Tonna galea	21082	FL	Palm Beach	Lk. Worth		4.7
Tonna galea	220653	FL	Palm Beach	Lk. Worth		4.7
Tonna galea	181541	FL	Palm Beach	Lower Lk. Worth		4.7
Tonna galea	172621	FL	Palm Beach	Lk. Worth		4.8
Tonna galea	11441	FL	Monroe	Dry Tortugas		4.9
Tonna galea	11447	FL	Monroe	Dry Tortugas		4.9
Tonna galea	11443	FL	Palm Beach	Boynton		4.9
Tonna galea	11443	FL	Palm Beach	Boynton		4.9
Tonna galea	21603	Veracruz	Palma Sola			5
Tonna galea	181545	FL	Palm Beach	Lower Lk. Worth		5
Tonna galea	181549	FL	Palm Beach	Upper Lk. Worth		5
Tonna galea	172621	FL	Palm Beach	Lk. Worth		5.1
Tonna galea	11443	FL	Palm Beach	Boynton		5.1
Tonna galea	11446	FL	Monroe	Ft. Jefferson		5.2
Tonna galea	21603	Veracruz	Palma Sola			5.3
Tonna galea	11443	FL	Palm Beach	Boynton		5.5
Tonna galea	123236	FL	Monroe	Newfound Harbor		5.6
Tonna galea	21603	Veracruz	Palma Sola	"		6.1
Tonna galea	146795	AL	Mobile	Mobile	21.9	6.3
Tonna galea	146796	FL	Monroe	Little Duck Key		6.3
Tonna galea	11446	FL	Monroe	Ft. Jefferson		6.3
Tonna galea	11445	FL	Palm Beach	Riviera		6.9
Tonna galea	232425	FL	Brevard	Cape Canaveral		8.4
Tonna galea	153268	FL	Monroe	Tea Table Key		8.4
Tonna galea	6914	FL	Monroe	Tortugas		8.6
Tonna galea	5	FL	Palm Beach	Singer Island		8.7
Tonna galea	79319	GA	Camden			8.8
Tonna galea	11437	FL	Okaloosa	Santa Rosa Is.		8.8

Species	Catalog Number	State/ Country	County/District	City	Depth (meters)	Length (cm)
Tonna galea	79319	GA	Camden	St. Marys		8.8
Tonna galea	232425	FL	Brevard	Cape Canaveral		9
Tonna galea	11445	FL	Palm Beach	Riviera		9
Tonna galea	79319	GA	Camden			9.2
Tonna galea	79319	GA	Camden			9.3
Tonna galea	174647	FL	Palm Beach	Boynton Beach		9.9
Tonna galea	164186	Puerto Rico	Punta Arenas			10
Tonna galea	232425	FL	Brevard	Cape Canaveral		10
Tonna galea	213158	TX	Jefferson	Sabine Pass		10.2
Tonna galea	164187	Puerto Rico	Guanajibo			10.3
Tonna galea	21658	Yucatan	NNE Obregon		29.3	11.3
Tonna galea	168966	FL	Monroe	Key West	29.3	11.4
Tonna galea	21457	FL	Franklin	Oyster boat		11.8
Tonna galea	23008	Campeche	Campeche Bay	shrimp boat trawl		12
Tonna galea	79319	GA	Camden			12
Tonna galea	153247	FL	Monroe	Little Pine Key		12.6
Tonna galea	31496	TX	Cameron	Brownsville	6.1	12.9
Tonna galea	11448	FL	Lee	Captiva Is.		13.2
Tonna galea	23008	Campeche	Campeche Bay	shrimp boat trawl		13.8
Tonna galea	168966	FL	Monroe	Key West	29.3	14
Tonna galea	197994	FL	Santa Rosa	Santa Rosa Is.		15
Tonna galea	129486	FL	Monroe	Ohio Key		15.7
Tonna galea	21658	Yucatan	NNE Obregon		29.3	17.1
Tonna galea	11442	FL	Monroe	Sugar Loaf Key		18.3
Tonna galea	168966	FL	Monroe	Key West	29.3	18.5
Tonna galea	11442	FL	Monroe	Sugar Loaf Key		18.6
Tonna galea	11442	FL	Monroe	Sugar Loaf Key		19.4
Tonna galea	168966	FL	Monroe	Key West	29.3	21.6

APPENDIX II
DATA FROM ARCHAEOLOGICAL SPECIMENS

AlMNH	Alabama Museum of Natural History, Tuscaloosa, AL
Gilcrease	Gilcrease Museum, Tulsa, OK
ILMNH	Illinois Museum of Natural History, Urbana-Champaign, IL
ISM	Illinois State Museum, Springfield, IL
ITARP	Illinois Transportation Archaeological Research Program, Urbana-Champaign, IL
LOA/UI	Lab of Anthropology, University of Illinois, Urbana-Champaign, IL
NMAI	National Museum of the American Indian, Bronx, NY
NMNH	National Museum of Natural History, Washington, DC
OMNH	Oklahoma Museum of Natural History, Norman, OK
RSPM	R. S. Peabody Museum, Andover, MA
SMAP	Spiro Mounds Archaeological Park, Spiro, OK

M/F = Male/Female
S/D = Sinistral/Dextral

Cahokia

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ILMNH	A447	5117	James Ramey Mound	*Fasciolaria tulipa*			1	whole shell	60			d	no
ILMNH	A448	5117	James Ramey Mound	*Strombus alatus*			1	whole shell	85.3			d	no
ILMNH	A335	5099/5117	James Ramey Mound	*Strombus* cf. *costatus*			1	whole shell				d	no
ILMNH	A450	5117	James Ramey Mound	*Littorina irrorata*			1	whole shell	21.3			d	no
LOA/UI	A3996		Powell Mound #2	*Oliva* spp.			4	bead				d	yes
ILMNH	A2389		Powell Mound #1	*Marginella* cf. *apicina*			36	bead				d	no
LOA/UI	A3997		Powell Mound #2	*Oliva* spp.			9	bead				d	yes
ISM		71-1509-7	Mound 72, F 101	*Pleuroploca gigantea*	yes	m	1	bead				d	no
LOA/UI	A3495		Powell Mound	*Marginella* spp.	yes		7510	bead				d	no
ILMNH	A2392		Powell Mound #1	*Marginella* cf. *apicina*			39	bead				d	no
ILMNH	A2374		Powell Mound #2	*Marginella* cf. *apicina*			1	bead				d	no
NMAI	21/9799		St. Clair Co.	*Marginella* spp.			5	bead				d	no
LOA/UI	A3996		Powell Mound #2	*Oliva* spp.			6	bead				d	yes
LOA/UI	A3997		Powell Mound #2	*Oliva* spp.			42	bead	59.4			d	yes
LOA/UI	A3997		Powell Mound #2	*Oliva* spp.			9	bead	52			d	yes
NMAI	22/23		St. Clair Co.	*Busycon sinistrum*			17	bead				s	no
LOA/UI	A3997		Powell Mound #2	*Oliva* spp.			44	bead				d	yes
LOA/UI	A3997		Powell Mound #2	*Oliva* spp.			3	bead				d	yes

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
LOA/UI	A3996		Powell Mound #2	*Oliva* spp.			8	bead				d	yes
ISM	71-1509-14		Mound 72				2	bead				d	no
ISM			Mound 72, Burial 117, F 227 & 219	*Oliva* spp.	yes		1	bead	27.8			d	no
LOA/UI	A336	5099/5117	James Ramey Mound	*Oliva* cf. *litterata*			1	bead	53.6			d	no
ISM		71-1509-3	Mound 72, F 236	*Busycon sinistrum*	yes		1	bead				s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	bead	33.2	14.4		s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	bead	36.7	20.6		s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	bead	35.1	16.7		s	no
LOA/UI	A106	5099/5117	James Ramey Mound	*Marginella* cf. *apicina*			1	bead				d	no
ISM	71-1509-3		Mound 72, feat. 236		yes		1	bead				d	no
ISM	71-1509-7		Mound 72, feat. 236		yes		10	bead				d	no
ISM	71-1509-7		Mound 72, see sheet				20	bead				s	no
ILMNH	A2368		Powell Mound #2	*Oliva* cf. *sayana*			9	bead				d	no
ISM	71-1509-14		Mound 72, see sheet				73	bead				s	no
ISM	71-1509-16		Mound 72, see sheet				82	bead				s	no
LOA/UI	A191	5099/5117	James Ramey Mound	*Marginella* cf. *apicina*			3	bead				d	no
LOA/UI	A228	5099/5117	James Ramey Mound	*Marginella* cf. *apicina*			2	bead				d	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	bead	38.2	17.8		s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	bead	24.5	15.1		s	no
ILMNH	A2368		Powell Mound #2	*Oliva* cf. *sayana*			2	bead				d	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	36.4			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	30			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	22.9			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	39.4			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	20			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	16.6			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	28.8			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	37.2			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	71.1			s	yes
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	60.1			s	yes

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	49.9			s	yes
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	43.5			s	yes
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	79.4			s	yes
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	53			s	yes
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	70.1			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	64.2			s	yes
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	60.8			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	30.8			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	28.3			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	88.5			s	yes
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	29.4			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	49.6			s	yes
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	24.9			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	24.6			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	37.8			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	30.5			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	25			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	bead blank	57.4			s	no
ISM		71-1509-16	Mound 72, F 236	*Busycon sinistrum*	yes		1	bead, tube				s	no
ISM		71-1509-16	Mound 72, F 236	*Busycon* cf. *sinistrum*	yes		1	bead, tube				s	no
ILMNH	MA129	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	cup	290	157.6	110	s	no
ILMNH	MA441	5117	Mound 19, 20, 21	*Busycon sinistrum*			1	cup	213			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	whole shell	5.9	4.8	92	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	70.2			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	97			s	no
ISM		1958-91	Ramey Field	*Pleuroploca gigantea*			1	debitage	7.3	5.2		d	no
ISM		1958-91	Ramey Field	*Thais haemostoma*			1	debitage	6.5	4.2		d	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	72.1		110	s	yes
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	whole shell	4.1	2.7	90	s	no
ISM		1958-91	Ramey Field	*Thais haemostoma*			1	whole shell	4.8	2.9		d	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ISM		1958-91	Ramey Field	*Strombus alatus*			1	whole shell	8.4	5.3		d	no
ISM		1958-91	Ramey Field	*Busycotypus spiratus*			1	whole shell	6.7	3.8		d	no
ISM		1958-91	Ramey Field	*Pleuroploca gigantea*			1	debitage	6.5	4		d	no
ISM		1958-91	Ramey Field	*Busycotypus spiratus*			1	whole shell	6.3	4.9		d	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	debitage	264.1		115	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	86.8			s	yes
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	99.5			s	yes
ISM		1958-91	Ramey Field, Mound 34	*Busycon* cf. *sinistrum*			1	debitage				s	yes
ISM		1958-91	Ramey Field, Mound 34	*Mercenaria* spp.			1	whole shell	49.6	40.3		d	no
ISM		1958-91	Ramey Field, Mound 34	*Pleuroploca gigantea*			1	whole shell	107.6			d	no
ISM		1958-91	Ramey Field, Mound 34	*Pleuroploca gigantea*			1	whole shell	109.2			d	no
ISM		1958-91	Ramey Field, Mound 34	*Pleuroploca gigantea*			1	whole shell	78.4			d	no
ISM		1958-91	Ramey Field, Mound 34	*Fasciolaria* spp.			1	debitage				d	no
ISM		1958-91	Ramey Field, Mound 34	*Strombus alatus*			1	whole shell	79.6			d	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	debitage	122.7		105	s	no
ISM		1958-91	Ramey Field	*Pleuroploca gigantea*			1	debitage	8.1			d	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	5.6			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	11.4			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	7.9			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	11.5			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	7.3			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	7.3			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	9.1			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	15.2			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	9.2			s	no
ISM		1958-91	Ramey Field	*Busycotypus spiratus*			1	whole shell	7.4	3.4		d	no
ISM		1958-91	Ramey Field	cf. *Pleuroploca gigantea*			1	debitage	6.7	7		d	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	45.7			s	no
ISM		1958-91	Ramey Field	*Conus* cf. *spurius*			1	debitage				d	no
ISM		1958-91	Ramey Field	*Conus* cf. *spurius*			1	debitage	6.3			d	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	11.9	6.6	114	s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	8.6			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	7	5.2	96	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	11	5.8	100	s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	debitage	150.4		117	s	no
ISM		1958-91	Ramey Field	*Busycotypus spiratus*			1	debitage	7.1	3.6		d	no
ISM		1958-91	Ramey Field	*Busycotypus spiratus*			1	debitage	4.2	3.3		d	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	90.1			s	no
ISM		1958-91	Ramey Field	*Busycotypus spiratus*			1	whole shell	6.6			d	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage				s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	6.8			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	139.2		115	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	43.5			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	136.8		120	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	165.5		120	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	127.8		123	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	117.7		106	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	99.2			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	114			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	119.7		122	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	151			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	77.9			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	75.9			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	13.7			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	99.5			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	80.9		111	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	78.8		110	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	82.4		123	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	47.4		105	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage			110	s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	36.9		110	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	31.3		105	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	38.4		105	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	98.1			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	139		120	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	49.9			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	33.2		103	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	82.8		105	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	91.1		112	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	43.3		92	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	141.5			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	67.5		111	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	126			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	100.8		120	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	136.1		115	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	112.7			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	145.6		115	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	51.4			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	60.3			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	98			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	96.8			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	89.6			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	106			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	113.5			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	111			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	99.5			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	123.9			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	112		110	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	14.1		107	s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	9.8			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ISM		1955-59	Kunnemann Mound	*Cassis* spp.			1	debitage	45.6			d	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	11.5		125	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	12.2		120	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	14.2		117	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	12.7		107	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	50.4			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	12.1		104	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	12.2		124	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	7.4		107	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	7.4		115	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	13.4		112	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	6.4		117	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	13.7		106	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	11.8			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	8.8		112	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	11.9		123	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	6.9		124	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	11.1		111	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	9.4		110	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	7.2			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	11			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	9.1		119	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	70.2			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	124.6			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	82			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	51.3			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	51.3			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	69.2			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	102.4			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	98.6			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	59			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	65			s	no
ISM		1973-53	East Stockade	*Marginella* spp.			1	debitage				d	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	72			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	10.6			s	no
ISM		1958-91	Ramey Field	*Pleuroploca gigantea*			1	debitage	17.1			d	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	66.7			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	112.7			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	103.5			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	126			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	56.4			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	58.9			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	76.6			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	71.9			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	101.9			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage			115	s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	63			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	7.2			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	6.7		114	s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	4.8			s	yes
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	3.1			s	yes
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	8.1			s	yes
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	7.3			s	yes
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	12.7			s	yes
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	6.2			s	yes
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	4.2			s	yes
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	13.4			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	5.6			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	9.6			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	6.5			s	no

Housed	Catalog #	Accecss. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	3.3			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	6.2			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	6.7			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	4.8			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	6			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	6.3			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	5.4			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	8.3			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	4.1			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	8.4			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	6			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	10.9	5.8		s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	13.8			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	9.9			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	12.1			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	11.3			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	14.7			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	14.7			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	18.1			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	18			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	16.5			s	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	11.7			s	yes
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	18.3			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	12			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	7.6			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	47.5			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	1.8			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	6.7			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	6.8			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	10.4			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	debitage	191			s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	debitage	160.5		100	s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	debitage	170		105	s	no
ISM		1955-59	Kunnemann Mound	*Busycon sinistrum*			1	debitage	139.1		111	s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	12.3			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	11.9			s	no
LOA/UI	A689	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	58.8			s	no
LOA/UI	A164	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage				s	no
LOA/UI	A4682			*Busycon sinistrum*			1	debitage	57.7			s	no
LOA/UI	Bag #72		N360, E340-50, surface	*Busycon sinistrum*			1	debitage				s	no
LOA/UI	Bag #72		N360, E340-50, surface	*Busycon sinistrum*			1	debitage	45.2			s	no
LOA/UI	A445	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	75.6			s	no
LOA/UI	A445	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	65.5			s	no
LOA/UI	A445	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	67.5			s	no
LOA/UI	A445	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	111.4			s	no
LOA/UI	A445	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	58.7			s	no
LOA/UI	A445	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	100.9			s	no
LOA/UI	A4682		James Ramey Mound	*Busycon sinistrum*			1	debitage	19.6			s	no
LOA/UI	A689	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	69.1			s	no
LOA/UI	A200	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	54.1			s	no
LOA/UI	A689	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	50.5			s	no
LOA/UI	A689	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	72.6			s	no
LOA/UI	A689	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	41.7			s	no
LOA/UI	A689	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	65.5			s	no
LOA/UI	A689	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	139.6			s	no
LOA/UI	A689	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	84.5			s	no
LOA/UI	A444	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	83.5			s	no
LOA/UI	A69	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	32.4			s	no
LOA/UI	A69	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	29.7			s	no
LOA/UI	A4682			*Busycon sinistrum*			1	debitage	32.8			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
LOA/UI	A4682			*Busycon sinistrum*			1	debitage	37.9			s	no
LOA/UI	A201	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	58.3			s	no
LOA/UI	A689	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	87.9			s	no
LOA/UI	A39	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	75			s	no
LOA/UI	A201	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	64.6			s	no
LOA/UI	A201	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	83.5			s	no
LOA/UI	A201	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	40.1			s	no
LOA/UI	A39	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	85.7			s	no
LOA/UI	A39	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	87.5			s	no
LOA/UI	A39	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	71.9			s	yes
LOA/UI	A39	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	88.7			s	no
LOA/UI	A39	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	65.3			s	no
LOA/UI	A39	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	66.1			s	no
LOA/UI	A39	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	103.2			s	no
LOA/UI	A100	5099/5117	James Ramey Mound, 8-12'	*Busycon sinistrum*			1	debitage	75.3			s	no
LOA/UI	A39	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	57.9			s	no
LOA/UI	A200	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	58.7			s	no
LOA/UI	A3517	Kelly exc.	Powell Mound	*Busycon sinistrum*			1	debitage	64.6			s	no
LOA/UI	A254	5099/5117	Sawmill Mound, #39	*Busycon sinistrum*			1	debitage	89.6			s	no
LOA/UI	A254	5099/5117	Sawmill Mound, #39	*Busycon sinistrum*			1	debitage	133.1			s	no
LOA/UI	A254	5099/5117	Sawmill Mound, #39	*Busycon sinistrum*			1	debitage	83.5			s	no
LOA/UI	A254	5099/5117	Sawmill Mound, #39	*Busycon sinistrum*			1	debitage	127.8			s	no
LOA/UI	A282	5099/5117	Sawmill Mound, #39	*Busycon sinistrum*			1	debitage	115.1			s	no
LOA/UI	A199	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	112.8			s	no
LOA/UI	A129	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	60.3			s	no
LOA/UI	A201	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	76.1			s	no
LOA/UI	A200	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	114.6			s	no
LOA/UI	A200	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	81			s	no
LOA/UI	A200	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	58.9			s	no
LOA/UI	A39	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	49			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ILMNH	A449	5117	James Ramey Mound	*Busycotypus* cf. *spiratus*			1	debitage	41.5			d	no
ISM		1958-91	Ramey Field	*Busycon* cf. *sinistrum*			1	debitage	6.9	2.4		s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinustrum*			1	debitage	284.4	168.8	125	s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	debitage	304.5			s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	debitage	173.3			s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	debitage	232.4		115	s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	debitage	280		115	s	no
LOA/UI	A3997		Powell Mound #2	*Busycon sinistrum*			1	debitage	92.8	28.4		s	yes
LOA/UI	A443	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	182.4			s	no
LOA/UI	A333	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	111.6			s	no
LOA/UI	A333	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	180.1			s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	debitage	130.1	104.7		s	no
ILMNH	A38	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	122.1			s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	debitage	262.8	125.7		s	no
ILMNH	A38	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	88.3			s	no
ILMNH	A446	5117	James Ramey Mound	*Pleuroploca gigantea*			1	debitage	87.4			d	no
ILMNH	A2390		Powell Mound #1	*Busycon sinistrum*			1	debitage	79			s	no
ILMNH	MA442	5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	142.9			s	no
ISM		1958-91	Ramey Field	*Phalium* cf. *granulatum*			1	debitage				d	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	debitage	11.8		120	s	no
ISM		1958-91	Ramey Field	*Pleuroploca gigantea*			1	debitage	12.7			d	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	78			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	82.3			s	no
ISM		1958-91	Ramey Field	*Fasciolaria* spp.			1	debitage	10.4			d	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	95.5			s	no
ISM		1958-91	Ramey Field, Mound 34	*Busycon sinistrum*			1	debitage	62.2			s	no
LOA/UI	A333	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	73.4			s	no
LOA/UI	A163	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	47.7			s	no
LOA/UI	A70	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	129			s	no
LOA/UI	A70	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	106.8			s	yes

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
LOA/UI	A70	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	92.1			s	no
LOA/UI	A70	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	82.8			s	no
LOA/UI	A70	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	60.3			s	no
LOA/UI	A70	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	57.6			s	no
LOA/UI	A70	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	92.9			s	no
LOA/UI	A128	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	56.4			s	no
LOA/UI	A128	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	97			s	no
LOA/UI	Bag149		N360E355	*Busycon sinistrum*			1	debitage	56.4			s	no
LOA/UI	13542		W side Alton/Southern RR	*Busycon sinistrum*			1	debitage	109.3	81.5		s	no
LOA/UI	A163	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	42.3			s	no
LOA/UI	A4682			*Busycon sinistrum*			1	debitage	41.3			s	no
LOA/UI	A202	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	26.5	30.5		s	yes
LOA/UI	A202	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	33.7	34.7		s	yes
LOA/UI	A202	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	38.2	35.7		s	yes
LOA/UI	A101	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	44			s	no
LOA/UI	A101	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	79.2			s	no
LOA/UI	A101	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	66.2			s	no
LOA/UI	A101	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	91.5			s	no
LOA/UI	A101	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	83.6			s	no
LOA/UI	A101	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	124.9			s	no
LOA/UI	A101	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	49.1			s	no
LOA/UI	A101	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	42.1			s	no
LOA/UI	A101	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	41.8			s	no
LOA/UI	A101	5099/5117	James Ramey Mound	*Busycon sinistrum*			1	debitage	37.7			s	no
LOA/UI	Bag149		N360E355	*Busycon sinistrum*			1	debitage	97			s	no
LOA/UI	A4682			*Busycon sinistrum*			1	debitage	42.5			s	no
NMAI	21/9774		St. Clair Co.	*Busycon sinistrum*			1	debitage	104.4			s	no
ISM		1958-91	Ramey Field	*Macrocallista nimbosa*			1	debitage	9.6				no
NMAI	21/9774		St. Clair Co.	*Busycon sinistrum*			1	debitage	61.4			s	no
ISM		1958-91	Ramey Field	*Marginella* spp.			1	debitage				d	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
ITARP			N362E349, 23cmbs, Md. 17	*Busycon sinistrum*			1	gorget				s	no
ISM			Mound 72, F236	*Busycotypus spiratus*	yes		1	fragment				d	no
ISM		1958-91	Ramey Field	*Busycotypus spiratus*			1	pendant	8.3	5		d	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	pendant	10.1	6.1	90	s	no
ILMNH	MA443	5117	James Ramey Mound	*Busycon sinistrum*			1	pendant	131.2			s	no
ILMNH	MA25483			*Busycon sinistrum*			1	pendant	140.2			s	no
ISM		1958-91	Ramey Field	*Busycon sinistrum*			1	pendant	8.3	5.5	85	s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	182.9			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	80.7			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	98.4			s	yes
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	85.4			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	103.2			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	141			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	118.5			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	141.8			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	158.4			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	203.1			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	156.2			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	141.3			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	153.3			s	yes
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	148.5			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	147.2			s	yes
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	236.6			s	no
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	151.5			s	yes
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	169.8			s	yes
NMNH	A082462		Madison Co.	*Busycon sinistrum*			1	debitage	128.5			s	no
NMNH	A218401		Madison Co., IL	*Busycon sinistrum*			1	gorget	87.1	70.9		s	no
Etowah													

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
RSPM	90.77.9		Mound C, bur. 29	*Busycon sinistrum*	yes		1	spoon	159.5			s	no
RSPM	61460		Mound C, bur 22	*Pleuroploca gigantea*	yes		1	whole shell	340			d	no
NMNH	A170813		Mound C	*Busycon sinistrum*			9	bead				s	no
NMNH	A170811		Mound C	*Busycon sinistrum*	yes		8	bead				s	no
RSPM	62010		Mound C, bur 57	*Busycon* cf. *carica*	yes		13	bead				d	no
NMNH	A170811		Mound C		yes		3	bead				d	no
NMNH	A170815		Mound C	*Busycon* cf. *carica*	yes		3	bead				d	no
NMNH	A171319			*Oliva* spp.			1	bead	45.6			d	no
RSPM	68266	61505	skull 621	*Marginella* spp.	yes		536	bead				d	no
NMNH	A170812			*Busycon sinistrum*			8	bead				s	no
NMNH	A214760			*Busycon sinistrum*			1	bead				s	no
NMNH	A214760						4	bead				d	no
RSPM	62027		Mound C, bur. 76	*Marginella* spp.	yes		581	bead				d	no
NMNH	A170813		Mound C				3	bead				d	no
RSPM	62020		Mound C, bur 6A	*Busycon sinistrum*	yes		1	bead	28.7			s	no
RSPM	61491		Mound C, bur 48	*Busycon sinistrum*	yes		1	bead				s	no
RSPM	62020		Mound C, bur 6A	*Busycon sinistrum*	yes		1	bead	27.5			s	no
NMNH	A170825		Mound C	*Busycon* cf. *sinistrum*	yes		4	bead				s	no
RSPM	62026		Mound C, bur 76	*Busycon sinistrum*	yes		1	bead	84			s	no
RSPM	61457		Mound C, bur 22	*Busycon sinistrum*	yes		1	cup	295.4		125	s	no
NMNH	A214759	38007	Steiner 1898	*Busycon sinistrum*			1	cup	132.1		120	s	no
RSPM	61457		Mound C, bur 22	*Busycon sinistrum*	yes		1	cup	261.4			s	no
NMNH	A170836		Mound C	*Busycon sinistrum*	yes		1	cup	260.4			s	no
RSPM	61458		Mound C, bur 22	*Busycon sinistrum*	yes		1	cup	145.3		105	s	no
RSPM	61458		Mound C, bur 22	*Busycon sinistrum*	yes		1	cup	258.5			s	no
RSPM	61459			*Busycon sinistrum*			1	cup	163.5			s	no
RSPM	62026		Mound C, bur 76	*Busycon sinistrum*	yes		1	cup?	196.6			s	no
RSPM	61958			cf. *Pleuroploca gigantea*			1	debitage	86.4			d	no
NMNH	A170866		Mound A, base	*Busycon sinistrum*			1	debitage	226.2			s	no
NMNH	A170866		Mound A, base	*Busycon sinistrum*			1	debitage	214.5			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
NMNH	A417908		surface	*Busycon sinistrum*			1	debitage	95			s	no
RSPM	61477		Mound C, bur. 37	*Busycon sinistrum*	yes		1	debitage	95.6			s	no
RSPM	62009		Mound C, bur 29/30	*Busycon sinistrum*	yes		1	debitage	129.5			s	no
RSPM	61442		Mound C	*Pleuroploca gigantea*	yes		1	debitage	154.9			d	no
RSPM	61372		Mound C, bur. 5	*Busycon sinistrum*	yes		1	gorget	88.4			s	no
RSPM	61932			*Busycon sinistrum*			1	gorget	107.8			s	no
RSPM	61425		Mound C, bur. 23	*Busycon sinistrum*	yes		1	gorget	98.3			s	no
NMNH	A170834		Mound C	*Busycon* cf. *sinistrum*	yes		1	gorget	118.4	105.2		s	no
RSPM	61382		Mound C, bur 13	*Busycon sinistrum*	yes		1	gorget	95.5			s	no
RSPM	82/R121			*Pleuroploca gigantea*			1	pin	178.9	33		d	no
RSPM	61813		Burial 13	*Busycon sinistrum*	yes		1	pin	168	26.2		s	no
NMNH	171155-0	37113		*Busycon sinistrum*			1	pin	173			s	no
NMNH	171157-0	37113		*Pleuroploca gigantea*			1	pin	171.2			d	no
RSPM	61814		Burial 13	*Busycon sinistrum*	yes		1	pin	151	26.3		s	no
RSPM	61814		Burial 13	*Busycon sinistrum*	yes		1	pin	142.5	26.6		s	no
RSPM	61815			*Busycon* cf. *carica*			1	pin	58.8			d	no
RSPM	82/R122			*Pleuroploca gigantea*			1	pin	166.7	32.5		d	no
RSPM	61956			cf. *Busycon carica*			1	pin	57.5			d	no
NMNH	A171156	37113		*Busycon sinistrum*			1	pin	65.8			s	no
RSPM	61956			cf. *Busycon carica*			1	pin	50.8			d	no
NMNH	A171158	37113	Steiner 1898	*Busycon sinistrum*			1	pin	146.4			s	no
RSPM			burial GG	*Busycon sinistrum*	yes		12	bead				s	no
RSPM			burial GG		yes		19	bead				d	no
RSPM	61820			*Busycon sinistrum*			1	debitage	63.3			s	no
RSPM				*Busycon sinistrum*			1	debitage	94.9			s	no
RSPM	61844		Burial 16	*Busycon sinistrum*	yes		1	gorget	122.1	106.5		s	no
RSPM	61888		burial 71	*Busycon sinistrum*	yes		1	gorget	123.1	107.1		s	no
RSPM	61841			*Busycon sinistrum*			1	gorget	121.5	108		s	no
RSPM	82/R124	89.1/10		*Busycon sinistrum*			1	gorget	142.5	126.6		s	no
RSPM	61889		burial 5	*Busycon sinistrum*	yes		1	gorget	107	91.9		s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
RSPM	61809		burial 133	*Busycon sinistrum*	yes		1	gorget	117.2	98.5		s	no
RSPM	61933		burial 6	*Busycon sinistrum*	yes		1	gorget	119.4	114.5		s	no
RSPM	82/r122			*Busycon sinistrum*			1	pin	119.9	35.1		s	no
RSPM	82/r120			*Busycon sinistrum*			1	pin	176.4	34.4		s	no
RSPM			burial EE	*Pleuroploca gigantea*	yes		1	pin	39.2	27.6		d	no
RSPM	61815			*Busycon sinistrum*			1	pin	153.7			s	no
RSPM	61814			*Busycon sinistrum*			1	pin	115.9	24.8		s	no
Moundville													
AlMNH	MWP57	A936.1.198	burial 2240	*Fasciolaria spp.*	yes		1	debitage	54.6			d	no
AlMNH	M SW 33	A936.2.55	burial 2543, 2393	*Busycon sinistrum*	yes		1	whole shell	221.8	131.5		s	no
AlMNH	MWP57	A936.1.198	burial 2240	*Busycon sinistrum*	yes		1	debitage	56.8			s	no
AlMNH	MEE 105	A.931.1.37	burial 1243, east Mnd. E	*Busycon sinistrum*	yes		1	debitage	21.5			s	no
NMNH	82361			*Busycon sinistrum*			1	whole shell	230		125	s	no
AlMNH	Rho 115	A930.2.274	burial 1949	*Busycon sinistrum*	yes		3	bead				s	no
AlMNH	WP179	A936.1.190	burial 2250	*Busycon sinistrum*	yes		7	bead				s	no
AlMNH	MNG 34	A930.5.56	burial 1012	*Oliva* spp.	yes		5	bead				d	no
AlMNH	MSWM 250	A930.3.193	burial 1160		yes		1	bead				d	no
AlMNH	WP175	A936.1.187	burial 2250	*Busycon sinistrum*	yes		5	bead				s	no
AlMNH	MSWM 250	A930.3.193	burial 1160		yes		1	bead				s	no
NMAI	17/1045			*Busycon sinistrum*			1	cup	250	126.5	100	s	no
NMAI	17/1044			*Busycon sinistrum*			1	cup	143.5	109.8		s	no
NMAI	17/1044			*Busycon sinistrum*			1	cup				s	no
AlMNH	Mi 1199	A941.4.516		*Busycon sinistrum*			1	cup?				s	no
NMAI	17/1044			*Busycon sinistrum*			1	cup?	72.5			s	no
AlMNH	MEE264	A931.1.334	burial 1332, east Mnd. E	*Busycon sinistrum*	yes	m	1	gorget	53	47.4		s	no
NMAI	17/1039			*Busycon sinistrum*			1	gorget	47.8	47.5		s	no
AlMNH	EE245			*Busycon sinistrum*			1	gorget	82.5	86.8		s	no
AlMNH	MEE265	A931.1.335	burial 1332, east Mnd. E	*Busycon sinistrum*	yes	m	1	gorget	53.8	48.9		s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
AlMNH	MEE 332	A931.1.336	burial 1383, east Mnd. E	*Busycon sinistrum*	yes		1	gorget	78.3	76.6		s	no
AlMNH	MSWM 202	A930.3.140	burial 985	*Oliva* spp.	yes		1	pendant	33.6			d	no
AlMNH	SWM 271	A930.3.168		*Pleuroploca gigantea*			1	pendant?	219			d	no
AlMNH	Md Rdway		A939.2.1095	*Busycon* cf. *sinistrum*			1	pendant?	84.1			s	no
Spiro													
Gilcrease	9025.599d			*Busycon sinistrum*			1		130			s	no
OMNH	LfCrI	B80-6	Craig Mnd., central floor	*Cassis madagascariensis*	yes		1					d	no
Gilcrease	9025.1733	B155-83	Craig Mnd., central floor	*Busycon sinistrum*	yes		1				125	s	no
Gilcrease	9025.1778	B155-76	Craig Mnd., central floor	*Busycon sinistrum*	yes		1				122	s	no
NMNH	A448885		Leflore Co.	*Cassis* spp.			1		80.8			d	no
NMNH	A448776		Leflore Co.	*Haliotis cracherodii*			1	whole shell	117.9				no
Gilcrease	9025.599C			*Busycon sinistrum*			1		194.5			s	no
NMNH	A423302		Leflore Co.	*Cassis* spp.			1		205.9			d	no
Gilcrease	9025.599F			*Busycon sinistrum*			1		247.4			s	no
Gilcrease	9025.1740	B155-68	Craig Mnd., central floor	*Busycon sinistrum*	yes		1				116	s	no
Gilcrease	9025.599G			*Busycon sinistrum*			1		182.6		130	s	no
Gilcrease	9025.1754	B155-91	Craig Mnd., central floor	*Busycon sinistrum*	yes		1		282.8			s	no
OMNH		B62	Craig Mnd., central floor	*Cassis madagascariensis*	yes		1	debitage				d	no
NMNH	A448885		Leflore Co.	*Cassis* spp.			1	debitage	128.8			d	no
OMNH	LfCrI1	B62-255	Craig Mnd., central floor	*Cassis madagascariensis*	yes		1					d	no
NMNH	A448885		Leflore Co.	*Cassis* spp.			1		125.1			d	no
SMAP		955		*Busycon sinistrum*			1		210	146	130	s	no
Gilcrease	9025.1760	B155-86	Craig Mnd., central floor	*Busycon sinistrum*	yes		1		43.9		106	s	no
Gilcrease	9025.1761	B155-95	Craig Mnd., central floor	*Busycon sinistrum*	yes		1		43.1		124	s	no
Gilcrease	9025.1763	B155-93	Craig Mnd., central floor	*Busycon sinistrum*	yes		1		59.3			s	no
OMNH	LfCrI1	B62-105	Craig Mnd., central floor	*Fasciolaria tulipa*	yes		1		100.5			d	no
Gilcrease	9025.1774	B155-65	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	debitage	164.7			s	no
OMNH	LfCrI1	B155-16	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	debitage	91.4	56.5		s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
SMAP		955		*Busycon sinistrum*			1	debitage	210	154	125	s	no
Gilcrease	9025.1595	B62-154	Craig Mnd., central floor	*Busycon sinistrum*	yes		1					s	no
OMNH	LfCrl1	B145-18	Craig Mnd., central floor	*Phyllonotus pomum*	yes		1					d	no
NMNH	A448885		Leflore Co.	*Cassis* spp.			1		99.2			d	no
NMNH	A448885		Leflore Co.	*Pleuroploca gigantea*			1		77.1			d	no
Gilcrease	9025.600B			*Busycon sinistrum*			1		206.4			s	no
OMNH	LfCrl1	B62-456	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	debitage	184.8	156.9	116	s	no
NMNH	A448775		Leflore Co.	*Dinocardium robustum*			1	whole shell	152.4				no
OMNH	LfCrl1	D81-8	Craig Mnd., dump	*Dinocardium robustum*			1		26.3	19.2			no
NMAI	18/9081		Leflore Co.	*Cassis madagascariensis*			1	debitage	168.5			d	no
NMAI	18/9080		Leflore Co.	*Cassis madagascariensis*			1	debitage	190.9			d	no
OMNH	LfCrl1	A16-7	Craig Mnd., central floor	*Busycon sinistrum*			1	debitage			115	s	no
NMNH	A448782		Leflore Co.	*Busycon sinistrum*			1	whole shell	249.5		120	s	no
NMNH	A448872		Leflore Co.	*Busycon sinistrum*			1		246.4		120	s	no
NMNH	A423302		Leflore Co.	*Cassis* spp.			1	debitage	115.1			d	no
Gilcrease	9025.599B			*Busycon sinistrum*			1		175.5			s	no
Gilcrease	9025.1743	B155-87	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	debitage	226			s	no
Gilcrease	9025.1742	B155-64	Craig Mnd., central floor	*Busycon sinistrum*	yes		1		110.7		115	s	no
NMNH	A448774		Leflore Co.	*Pleuroploca gigantea*			1	debitage	120.3			d	no
Gilcrease	9025.1744	B155-75	Craig Mnd., central floor	*Busycon sinistrum*	yes		1		248.1			s	no
NMNH	A448885		Leflore Co.	*Cassis* spp.			1		49.2			d	no
OMNH	LfCrl1	A11-34	Craig Mnd., NW cluster	*Busycon sinistrum*			1	debitage	232.5	130.3	127	s	no
Gilcrease	9025.1726	B155-69	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	debitage	235.8			s	no
Gilcrease	9025.1777	B155-74	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	debitage			112	s	no
OMNH	LfCrl1	A11-26	Craig Mnd., NW cluster	*Busycon sinistrum*			1	debitage	259.8	147.4	119	s	no
OMNH	LfCrl1	A6-13	Craig Mnd., NW cluster	*Busycon sinistrum*			1	debitage	154.8	117.1	125	s	yes
OMNH	LfCrl1	B150-2	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	whole shell	242.4	162.4	115	s	no
Gilcrease	9025.669			*Olivella* spp.			108	bead				d	no
Gilcrease	9025.649			*Busycon sinistrum*			2	bead				s	no
Gilcrease	9025.619			*Busycon sinistrum*			23	bead				s	no

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Gilcrease	9025.649			*Pleuroploca gigantea*			2	bead				d	no
Gilcrease	9025.670			*Olivella* spp.			88	bead				d	no
Gilcrease	9025.671			*Pleuroploca gigantea*			2	bead				d	no
Gilcrease	9025.405			*Pleuroploca gigantea*			6	bead				d	no
OMNH	Lf40/953b		Craig Mnd.	*Marginella* spp.			400	bead				d	no
OMNH		B145-156	Craig Mnd., central floor	*Busycon sinistrum*	yes		20	bead				s	no
OMNH	Lf40/950d		Craig Mnd.	*Busycon sinistrum*			11	bead				s	no
Gilcrease	9025.405			*Busycon sinistrum*			18	bead				s	no
Gilcrease	9025.648			*Busycon sinistrum*			15	bead				s	no
OMNH	Lf40/950f		Craig Mnd.	*Busycon sinistrum*			1	bead	80.5			s	no
Gilcrease	9025.688			*Olivella* spp.			102	bead				d	no
OMNH	Lf40/953d		Craig Mnd.	*Pleuroploca gigantea*			1	bead				d	no
Gilcrease	9025.406			*Pleuroploca gigantea*			1	bead				d	no
Gilcrease	9025.408			*Pleuroploca gigantea*			1	bead				d	no
Gilcrease	9025.408			*Busycon sinistrum*			12	bead				s	no
OMNH	Lf40/953f		Craig Mnd.	*Busycon sinistrum*			1	bead				s	yes
OMNH	Lf40/953d		Craig Mnd.	*Busycon sinistrum*			51	bead				s	no
Gilcrease	9025.651			*Busycon sinistrum*			42	bead				s	no
Gilcrease	9025.801			*Busycon sinistrum*			26	bead				s	no
OMNH	Lf40/953d		Craig Mnd.	*Busycon sinistrum*			24	bead				s	no
OMNH	Lf40/953f		Craig Mnd.	*Busycon sinistrum*			117	bead				s	no
OMNH	Lf40/953f		Craig Mnd.	*Pleuroploca gigantea*			1	bead				d	no
Gilcrease	9025.650			*Busycon sinistrum*			32	bead				s	no
Gilcrease	9025.406			*Busycon sinistrum*			26	bead				s	no
OMNH	Lf40/953d		Craig Mnd.	*Pleuroploca gigantea*			23	bead				d	no
Gilcrease	9025.650			*Pleuroploca gigantea*			3	bead				d	no
Gilcrease	9025.801			*Pleuroploca gigantea*			9	bead				d	no
OMNH	Lf40/953c		Craig Mnd.	*Olivella biplicata*			33	bead				d	no
OMNH	Lf40/953d						1	bead				d	no
OMNH	Lf40/953g			*Busycon sinistrum*			3	bead				s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
OMNH	Lf40/953f			*Busycon sinistrum*			1	bead	58.4			s	no
NMNH	A423325		Leflore Co.	*Olivella* spp.			2	bead				d	no
OMNH	Lf40/953f			*Busycon sinistrum*			1	bead	49.5			s	no
OMNH	Lf40/953f			*Busycon sinistrum*			1	bead	89			s	no
OMNH	Lf40/953f			*Busycon sinistrum*			1	bead	91.4			s	no
OMNH	Lf40/953f						1	bead	60.7	18		d	no
OMNH	Lf40/953f						75	bead				s	no
OMNH	Lf40/953f						1	bead	12.8			d	no
OMNH	Lf40/953f						1	bead	13.1			d	no
OMNH	LfCrl	B49-5	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	bead	71	23.6		s	yes
OMNH	Lf40/950r			*Busycon sinistrum*			3	bead				s	no
NMNH	A423323		Leflore Co.	*Busycon sinistrum*			1	bead	115.9			s	no
OMNH	Lf40/952m			*Busycon sinistrum*			4	bead				s	no
OMNH	LfCrl	B51-6b	Craig Mnd., central flank west	*Busycon sinistrum*	yes		4	bead				s	no
NMNH	A423323		Leflore Co.	*Busycon sinistrum*			1	bead	136.5			s	no
OMNH	LfCrl	B44-57	Craig Mnd., central floor		yes		16	bead				s	no
OMNH		B48-39a	Craig Mnd., central floor	*Busycon sinistrum*	yes		21	bead				s	no
OMNH		B48-39a	Craig Mnd., central floor		yes		2	bead				d	no
OMNH		B44-57	Craig Mnd., central floor		yes		15	bead				s	no
NMNH	A423314		Leflore Co.				10	bead				d	
NMNH	A423314		Leflore Co.	*Busycon sinistrum*			43	bead				s	no
NMNH	A423326		Leflore Co.	*Busycon sinistrum*			2	bead	21			s	no
NMNH	A423324		Leflore Co.	*Olivella* spp.			1	bead	13.7			d	no
NMNH	A423325		Leflore Co.	*Busycon sinistrum*			1	bead	20.9			s	no
NMNH	A423325		Leflore Co.	*Busycon sinistrum*			1	bead	21			s	no
OMNH	Lf40/952d	a/77/2/1	Craig Mnd.	cf. *Thais*			13	bead				d	no
NMNH	A448734		Leflore Co.	*Olivella* spp.			2000	bead				d	no
Gilcrease	9025.592			*Busycon sinistrum*			1	bead	129.3			s	no
OMNH	Lf40/951j		Craig Mnd.	*Busycon sinistrum*			7	bead				s	no
NMAI	20/231		Leflore Co.	*Busycon sinistrum*			1	bead	28.3			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
NMAI	20/231		Leflore Co.	*Busycon sinistrum*			1	bead	61.2			s	no
OMNH	LfCrI1	A16-19	Craig Mnd., central floor	*Busycon sinistrum*			7	bead				s	no
OMNH	LfCrI1	A16-11	Craig Mnd., central floor	*Busycon sinistrum*			85	bead				s	no
OMNH	LfCrI1	A16-8	Craig Mnd., central floor	*Pleuroploca gigantea*			1	bead	66.7	32.3		d	no
OMNH	Lf40/951g		Craig Mound	*Busycon sinistrum*			5	bead				s	no
Gilcrease	9025.800			*Busycon sinistrum*			28	bead				s	no
OMNH	Lf40/953f			*Busycon sinistrum*			1	bead	42.6			s	no
Gilcrease	9025.647			*Busycon sinistrum*			25	bead				s	no
OMNH	Lf40/953j			*Busycon sinistrum*			3	bead				s	no
Gilcrease	9025.647			*Pleuroploca gigantea*			4	bead				d	no
NMNH	A423326		Leflore Co.				1	bead				d	no
OMNH	Lf40/953h			*Busycon sinistrum*			5	bead				s	no
NMNH	A423326		Leflore Co.				14	bead				s	no
OMNH	Lf40/953d			*Busycon sinistrum*			4	bead				s	no
Gilcrease	9025.648			*Pleuroploca gigantea*			1	bead				d	no
NMNH	A448725		Leflore Co.	*Busycon sinistrum*			28	bead				s	no
NMNH	A423331		Leflore Co.	*Olivella* spp.			2500	bead				d	no
NMNH	A542536		Leflore Co.	*Olivella* spp.			1192	bead				d	no
NMNH	A423323		Leflore Co.				1	bead	83.7	17.4		d	no
OMNH	LfCrI1	A11-29	Craig Mnd., NW cluster				46	bead				s	no
NMAI	22/330		Leflore Co.	*Olivella* spp.			58	bead				d	no
Gilcrease	9025.1697	B62-8	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	325		120	s	no
Gilcrease	9025.541			*Busycon sinistrum*			1	cup	321.3			s	no
OMNH	LfCrI1	B62-152	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	79.5	57.5		s	no
Gilcrease	9025.1680	B23-36	Craig Mnd.	*Busycon sinistrum*	yes		1	cup				s	no
OMNH	LfCrI	#754tunnel	Craig Mnd.	*Busycon sinistrum*			1	cup	86.7	38.8		s	no
OMNH	LfCrI1	B62-453	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	56.7		117	s	no
OMNH	LfCrI1	A11-23	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	298.1	176	112	s	no
OMNH	Lf40/33	A/57-58/20	Craig Mnd	*Busycon sinistrum*			1	cup	287.3	184	130	s	no
OMNH	Lf40/692	Hamilton	Craig Mnd.	*Busycon sinistrum*			1	cup	257.3	180	122	s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
OMNH	LfCrI1	B54-31,32	Craig Mnd., central floor	*Pleuroploca gigantea*	yes		1	cup				d	no
OMNH	LfCrI1	D250-4	Craig Mnd., dump	*Pleuroploca gigantea*			1	cup	105.2			d	no
OMNH	Lf40-833		Craig Mnd.	*Busycon sinistrum*			1	cup	90.8	67.4		s	no
Gilcrease	9025.1622	B126-3	Craig Mnd., summit	*Busycon sinistrum*	yes		1	cup			113	s	no
OMNH	LfCrI	#754tunnel	Craig Mnd.	*Busycon sinistrum*			1	cup	71.5	31		s	no
Gilcrease	9025.386		Craig Mnd.	*Busycon sinistrum*	yes		1	cup	286.5	177	120	s	no
OMNH	LfCrI	#754tunnel	Craig Mnd.	*Busycon sinistrum*			1	cup	56.3	28.7		s	no
OMNH	LfCrI	#754tunnel	Craig Mnd.	*Busycon sinistrum*			1	cup	139.5	63.8		s	no
OMNH	Lf40-17	B33-2	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	132.3	119		s	no
OMNH	LfCrI1	B62-228	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	100.9	65.5		s	no
OMNH	LfCrI1	B62-253	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	92	39.5		s	no
Gilcrease	9025.554	1857		*Busycon sinistrum*			1	cup	91.3	94.3		s	no
OMNH	Lf40/735?	B108-10	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	209.3	132		s	no
Gilcrease	9025.1612	B44-12	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	67.8			s	no
Gilcrease	9025.553		Craig Mnd.	*Busycon sinistrum*			1	cup				s	no
Gilcrease	9025.587		Craig Mnd.	*Busycon sinistrum*	yes		1	cup	236.8			s	no
OMNH	Lf40-833		Craig Mnd.	*Busycon sinistrum*			1	cup	20.6			s	no
Gilcrease	9025.1706	D182	Craig Mnd., dump	*Busycon sinistrum*			1	cup				s	no
Gilcrease	9025.1670	B69-6	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	118	113	121	s	no
Gilcrease	9025.1557	A26-28	Craig Mnd., main cone	*Busycon sinistrum*	yes		1	cup	82.4			s	no
Gilcrease	9025.1478	B62-139	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup				s	no
Gilcrease	9025.1589	B23-83	Craig Mnd.	*Busycon sinistrum*	yes		1	cup	81.1			s	no
Gilcrease	9025.1564	B156-9	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	190.8			s	no
Gilcrease	9025.1646	D86-4	Craig Mnd., dump	*Busycon sinistrum*			1	cup	59.2	56.7		s	no
Gilcrease	9025.1472	B62-52	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	169		123	s	no
Gilcrease	9025.547			*Busycon sinistrum*			1	cup	75.7	76.4		s	no
Gilcrease	9025.1705	D86-2	Craig Mnd., dump	*Busycon sinistrum*			1	cup	85.6	86.4		s	no
Gilcrease	9025.1746	D63+	Craig Mnd., dump	*Busycon sinistrum*			1	cup	139.2			s	no
Gilcrease	9025.1623	B62-33	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup				s	no
Gilcrease	9025.1471	B62-132	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup				s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
Gilcrease	9025.1719	B62-112c	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	91			s	
Gilcrease	9025.1519	B23-46	Craig Mnd.	*Busycon sinistrum*	yes		1	cup				s	no
Gilcrease	9025.1682	B62-73	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup				s	no
Gilcrease	9025.544			*Busycon sinistrum*			1	cup			113	s	no
Gilcrease	9025.1642	D63+	Craig Mnd., dump	*Busycon sinistrum*			1	cup				s	no
Gilcrease	9025.1647	D184	Craig Mnd., dump	*Busycon sinistrum*			1	cup			121	s	no
Gilcrease	9025.1688	B47-9	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	90.8	68.3	117	s	no
Gilcrease	9025.1696	B108-20	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	184.2	149		s	no
Gilcrease		B62-115	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	85.2	90.4	122	s	no
Gilcrease	9025.			*Busycon sinistrum*			1	cup	277.5	162	115	s	no
Gilcrease	9025.1583	A26-60	Craig Mnd., central floor	*Pleuroploca gigantea*			1	cup				d	no
Gilcrease	9025.1642	D63+	Craig Mnd., dump	*Busycon sinistrum*			1	cup				s	no
Gilcrease	9025.1647	D184	Craig Mnd., dump	*Busycon sinistrum*			1	cup			121	s	no
Gilcrease	9025.1643	B62-160	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	60.2			s	no
Gilcrease	9025.1607	A26-26	Craig Mnd., central floor	*Busycon sinistrum*	no		1	cup	65			s	no
Gilcrease	9025.1695	B62-12	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	215.3			s	no
Gilcrease	9025.1751	B155-81	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	200			s	no
Gilcrease	9025.599E			*Busycon sinistrum*			1	cup	230.5			s	no
Gilcrease	9025.1473	B62-10	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	251.6		121	s	no
Gilcrease	9025.0			*Busycon sinistrum*			1	cup	168.8			s	no
Gilcrease	9025.1720	A11-15	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	281.4		110	s	no
Gilcrease	9025.1731	B155-66	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	173.7			s	no
Gilcrease	9025.5994			*Busycon sinistrum*			1	cup	170		124	s	no
Gilcrease	9025.1723	A11-18	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	295.8		115	s	no
Gilcrease	9025.1736	B155-79	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup			130	s	no
Gilcrease	9025.1725	B155-96	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	219.3			s	no
Gilcrease	9025.1727a	B155-73b	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	225		109	s	no
Gilcrease	9025.1721	A11-17	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	272.5		117	s	no
Gilcrease	9025.598		Craig Mnd.	*Busycon sinistrum*			1	cup	205.7		140	s	no
Gilcrease	9025.1641	B62-87	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup				s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
Gilcrease	9025.1724a	A11-28	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	224.6			s	no
Gilcrease	9025.1728	B155-97	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	161.5			s	no
Gilcrease	9025.1666	B23-53	Craig Mnd.	*Busycon sinistrum*	yes		1	cup				s	no
Gilcrease	9025.1752	B155-1752	Craig Mnd., central floor	*Fleuroploca gigantea*	yes		1	cup	131.5			d	no
Gilcrease	9025.1737	B155-90	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup			125	s	no
Gilcrease	9025.1734	B155-60	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup			110	s	no
Gilcrease	9025.1748	B155-71	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	241.5			s	no
Gilcrease	9025.1776	B8-17	Craig Mnd., NW cluster	*Busycon sinistrum*	yes		1	cup	238.6		127	s	no
Gilcrease	9025.546			*Busycon sinistrum*			1	cup			110	s	no
Gilcrease	9025.1745	A11-38	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	199.4			s	no
Gilcrease	9025.1750	A11-13	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	291.5			s	no
Gilcrease	9025.1749	B36-36	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	218.5		121	s	no
Gilcrease	9025.5991			*Busycon sinistrum*			1	cup	199		106	s	no
Gilcrease	9025.1753	B155-58	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	182.5		133	s	no
Gilcrease	9025.5993			*Busycon sinistrum*			1	cup	243.2		126	s	no
Gilcrease	9025.1722	A11-11	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	355.6			s	no
Gilcrease	9025.1729	B155-82	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup			120	s	no
OMNH	LfCrI1	B156-15	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	182	138.9	134	s	no
OMNH	LfCrI1	B156-3	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	189.7	139.2	120	s	no
OMNH	LfCrI	B44	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	198.1	124.2		s	no
OMNH	LfCrI1	B8-16	Craig Mnd., NW cluster	*Busycon sinistrum*	yes		1	cup	208.3	148.1	130	s	no
OMNH	LfCrI1	B8-13	Craig Mnd., NW cluster	*Busycon sinistrum*	yes		1	cup	263.9	154		s	no
OMNH	LfCrI1	B8-20	Craig Mnd., NW cluster	*Busycon sinistrum*	yes		1	cup	194.7	153.3		s	no
OMNH	LfCrI	B108-10	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	211.3	122.7		s	no
OMNH	LfCrI1	B8-11	Craig Mnd., NW cluster	*Busycon sinistrum*	yes		1	cup	244.8	179.1	120	s	no
OMNH	LfCrI1	B156-8	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	221.2	134	120	s	no
OMNH	LfCrI1	B62-455	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	182.5	158.4	130	s	no
OMNH	LfCrI1	B62-111	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	172.7	158	132	s	no
OMNH	LfCrI1	B62-2a	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	172.1	164.5	120	s	no
OMNH			Craig Mnd.	*Busycon sinistrum*			1	cup		147	125	s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
OMNH			Craig Mnd.	*Busycon sinistrum*			1	cup	179.1	157	122	s	no
OMNH	LfCrI	stake 14-4	Craig Mnd.	*Busycon sinistrum*			1	cup	205	150.6	130	s	no
OMNH	LfCrI	B62-107	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup				s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	32.4			s	no
OMNH	LfCrI1	B8-19	Craig Mnd., NW cluster	*Busycon sinistrum*	yes		1	cup	222.3	180.2		s	no
OMNH	LfCrI1	A11-22	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	235.9	160		s	no
OMNH	LfCrI1	B108-76	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	155	81.2		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	116.3	96.2		s	no
OMNH	LfCrI1	D250-2	Craig Mnd., dump	*Busycon sinistrum*			1	cup	234.2	189.4	124	s	no
OMNH	LfCrI1	A11-35	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	255.5	140.5	124	s	no
OMNH	LfCrI1	A11-32	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	210.1	160.5	124	s	no
OMNH	LfCrI1	B8-25	Craig Mnd., NW cluster	*Busycon sinistrum*	yes		1	cup	197.3	153.2	122	s	no
OMNH	LfCrI1	A6-15	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	266.8	167.8	129	s	no
OMNH	LfCrI1	B156-12	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	176.6	134.5	126	s	no
OMNH	LfCrI1	A11-20	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	303	156.4	120	s	no
OMNH	LfCrI1	A11-27	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	252.5	164.4	127	s	no
OMNH	LfCrI1	A11-24	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	263.8	149.3	117	s	no
OMNH	LfCrI1	A11-12	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	295.9	211.5		s	no
OMNH	LfCrI1	A11-9	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	293.5	164.9	118	s	no
OMNH	LfCrI1	B54-30	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	178.1	133.2	124	s	no
OMNH	Lf40/692	HWH55		*Busycon sinistrum*			1	cup	355.4	203.1	136	s	no
OMNH	Lf40/21		Craig Mnd.	*Pleuroploca gigantea*			1	cup	80.2	95.1		d	no
OMNH	LfCrI1	A11-10	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	323.5	180.5	132	s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	86.7			s	no
OMNH	LfCrI	B163-1	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	252.1			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	137.4	140.6		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	62.1			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	62.7			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	56.1			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	197.4	148.2		s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	93.1			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	193.9	148.2		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	66.5			s	no
OMNH	LfCrl1	A11-21	Craig Mnd., NW cluster	*Busycon sinistrum*			1	cup	269.7	161	130	s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	62.5			s	no
OMNH	LfCrl1	B62-324	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	69	54.3		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	80			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	103			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	72.5			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	32.9		119	s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	71.1			s	no
OMNH	LfCrl	stake 16:0	Craig Mnd.	*Busycon sinistrum*			1	cup	186.5	136.8		s	no
OMNH	LfCrl	B108-10	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	168.5	87		s	no
OMNH	LfCrl	B108-10	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	174.9	127.8		s	no
OMNH	LfCrl	B108-10	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	161	141.4		s	no
OMNH	LfCrl	B108-10	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	213.5	154		s	no
OMNH	LfCrl	B44	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	136.4	102.3		s	no
OMNH	LfCrl	B44	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	124.6	107.5		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	129.6	102.3		s	no
OMNH	LfCrl	B44	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	173.9			s	no
NMNH	423228	228126	Leflore Co.	*Busycon sinistrum*			1	cup	277.4		125	s	no
OMNH	LfCrl	stake 16:0	Craig Mnd.	*Busycon sinistrum*			1	cup	199	116.9		s	no
OMNH	LfCrl1	B136-11	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	202.6	144.6	131	s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	182.7			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	59.1			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	78.4		128	s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	54.5			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	38.5		116	s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	26.2		110	s	no
OMNH	LfCrl	B44	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	135.4			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	276.4		110	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	191.2		111	s	no
NMNH	A423241		Leflore Co.	*Busycon sinistrum*			1	cup	341.3		129	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	240.6		108	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	290.7		110	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	277.5		124	s	no
NMNH	A423240		Leflore Co.	*Busycon sinistrum*			1	cup	312.5		105	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	256.2		115	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	287.7		116	s	no
NMNH	A423250		Leflore Co.	*Busycon sinistrum*			1	cup	284.6		114	s	no
NMNH	A423255		Leflore Co.	*Busycon sinistrum*			1	cup	220.2		116	s	no
NMNH	A423252		Leflore Co.	*Busycon sinistrum*			1	cup	207.5		115	s	no
NMNH	A423263		Leflore Co.	*Busycon sinistrum*			1	cup	128.6		130	s	no
NMNH	A423260		Leflore Co.	*Busycon sinistrum*			1	cup	192.2		118	s	no
NMNH	A423239		Leflore Co.	*Busycon sinistrum*			1	cup	315.9		130	s	no
NMNH	A423244		Leflore Co.	*Busycon sinistrum*			1	cup	293.6		120	s	no
OMNH	LfCr11	D250-6	Craig Mnd., dump	*Busycon sinistrum*			1	cup	230.2	158.5	125	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	249.4		105	s	no
NMNH	A448813		Leflore Co.	*Busycon sinistrum*			1	cup	343.4		107	s	no
SMAP		955		*Busycon sinistrum*			1	cup	174		135	s	no
SMAP		955		*Busycon sinistrum*			1	cup	250	162	110	s	no
NMNH	A378243		Leflore Co.	*Busycon sinistrum*			1	cup	260.4		122	s	no
NMNH	A378243		Leflore Co.	*Busycon sinistrum*			1	cup	137.4		125	s	no
NMNH	A378243		Leflore Co.	*Busycon sinistrum*			1	cup	243		120	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	196		121	s	no
NMNH	A448808		Leflore Co.	*Busycon sinistrum*			1	cup	358.8			s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	211.4		110	s	no
NMNH	A448811		Leflore Co.	*Busycon sinistrum*			1	cup	249.7		121	s	no
NMNH	A448809		Leflore Co.	*Busycon sinistrum*			1	cup	257.1		118	s	no
NMNH	A448810		Leflore Co.	*Busycon sinistrum*			1	cup	272.8		125	s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	191.3		120	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	206.4		115	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	241.4		116	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	276		117	s	no
NMNH	A423228		Leflore Co.	*Busycon sinistrum*			1	cup	204.4		123	s	no
NMNH	A448807		Leflore Co.	*Busycon sinistrum*			1	cup	317.5		133	s	no
NMNH	A448782		Leflore Co.	*Busycon sinistrum*			1	cup	235.9		110	s	no
NMNH	A423242		Leflore Co.	*Busycon sinistrum*			1	cup	325.9		122	s	no
NMNH	A448880		Leflore Co.	*Busycon sinistrum*			1	cup	240		110	s	no
NMNH	A448786		Leflore Co.	*Busycon sinistrum*			1	cup	200.4		126	s	no
NMNH	A448788		Leflore Co.	*Busycon sinistrum*			1	cup	262.5		130	s	no
NMNH	A448789		Leflore Co.	*Busycon sinistrum*			1	cup	356		125	s	no
NMNH	A448798		Leflore Co.	*Busycon sinistrum*			1	cup	341.3		115	s	no
NMNH	A448787		Leflore Co.	*Busycon sinistrum*			1	cup	236		117	s	no
NMNH	A448797		Leflore Co.	*Busycon sinistrum*			1	cup	253.4		125	s	no
NMNH	A448872		Leflore Co.	*Busycon sinistrum*			1	cup	280.5		120	s	no
NMNH	A542538		Leflore Co.	*Busycon sinistrum*			1	cup	247.9		125	s	no
NMNH	A423288	2734	Leflore Co.	*Pleuroploca gigantea*			1	cup	107.8			d	no
NMNH	A423226		Leflore Co.	*Pleuroploca gigantea*			1	cup	165.8			d	no
NMNH	448796		Leflore Co.	*Busycon sinistrum*			1	cup	344.6		103	s	no
NMNH	448793		Leflore Co.	*Busycon sinistrum*			1	cup	337.5		125	s	no
NMNH	423228		Leflore Co.	*Busycon sinistrum*			1	cup	267.2		120	s	no
NMNH	423228		Leflore Co.	*Busycon sinistrum*			1	cup	264.9		121	s	no
NMNH	A448790		Leflore Co.	*Busycon sinistrum*			1	cup	270.8		125	s	no
NMNH	A448799		Leflore Co.	*Busycon sinistrum*			1	cup	343.2		126	s	no
NMNH	A423232	field#2880	Leflore Co.	*Busycon sinistrum*			1	cup	279.5		122	s	no
NMNH	A423232	field#2879	Leflore Co.	*Busycon sinistrum*			1	cup	213.5		125	s	no
NMNH	A423232	field#2759	Leflore Co.	*Busycon sinistrum*			1	cup	241		125	s	no
NMNH	A423232	field#2758	Leflore Co.	*Busycon sinistrum*			1	cup	165		121	s	no
NMNH	A448878		Leflore Co.	*Busycon sinistrum*			1	cup	190.5		126	s	no

Housed	Catalog #	Accecss. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
NMNH	A423238		Leflore Co.	*Busycon sinistrum*			1	cup	351.9		124	s	no
NMNH	A448783		Leflore Co.	*Busycon sinistrum*			1	cup	249.4		121	s	no
NMNH	A423233		Leflore Co.	*Busycon sinistrum*			1	cup	262		106	s	no
NMNH	423228		Leflore Co.	*Busycon sinistrum*			1	cup	235.4		140	s	no
NMNH	A448804		Leflore Co.	*Busycon sinistrum*			1	cup	314.9		119	s	no
NMNH	A448800		Leflore Co.	*Busycon sinistrum*			1	cup	288.3			s	no
NMNH	A448803		Leflore Co.	*Busycon sinistrum*			1	cup	210		120	s	no
NMNH	A448806		Leflore Co.	*Busycon sinistrum*			1	cup	327.1		130	s	no
NMNH	A448805		Leflore Co.	*Busycon sinistrum*			1	cup	255.4		121	s	no
NMNH	A448802		Leflore Co.	*Busycon sinistrum*			1	cup	261.8		130	s	no
NMNH	A448792		Leflore Co.	*Busycon sinistrum*			1	cup	248.8		116	s	no
NMNH	A448794		Leflore Co.	*Busycon sinistrum*			1	cup	287.7		126	s	no
NMNH	A423237	2910	Leflore Co.	*Busycon sinistrum*			1	cup	304.3		129	s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	113.5			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	96.9	68.8		s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	136.5	102		s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	99.4	103.2		s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	91.6			s	no
OMNH	LfCrI1	B62-320	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	70.7	44.5		s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	119	84.4		s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	87.6			s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	192.5	151.5		s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	80.7			s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	83.4		115	s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	124		119	s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	120.5	135.9		s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	137.2	90.5		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	79.7			s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	121			s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	116.4			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	86.7		115	s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	110.6			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	124.5			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	106	89.8		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	110.8	83.4		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	56.4		97	s	no
OMNH	Lf40/748		Craig Mnd., at tunnel	*Busycon sinistrum*			1	cup	97.1	60.4		s	no
OMNH	LfCr11	B62-321	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	59.8	42.5		s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	124.3			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	15.9		100	s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	26.3			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	33.8			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	110.1	107.8		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	70			s	no
OMNH	LfCr11	B62-392	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	26.3	42.6		s	no
OMNH	Lf40/748		Craig Mnd, tunnel at stake 15:6	*Busycon sinistrum*			1	cup	205.5	130.5		s	no
OMNH	Lf40/748		Craig Mnd, tunnel at stake 15:6	*Busycon sinistrum*			1	cup	177.4	72.8		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	85.7			s	no
OMNH	LfCr11	B62-267	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	100			s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	140	119.1		s	no
OMNH	LfCr11	B62-224	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	110	93.8		s	no
OMNH	LfCr11	B62-11	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	134.4	135.4		s	no
OMNH	LfCr11	B62-51	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	97.6			s	no
OMNH	LfCr11	B62-218	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	82.4	74.9		s	no
OMNH	LfCr11	B62-60	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	173.5			s	no
OMNH	LfCr11	B62-293	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	54		110	s	no
OMNH	LfCr11	B62-74	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	108.4	101.6		s	no
OMNH	LfCr11	B62-287	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	77.5			s	no
OMNH	LfCr11	B62-220	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	105.2			s	no
OMNH	LfCr11	B62-89	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	44.7	32.4		s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
OMNH	LfCrI1	B62-6	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	62.9			s	no
OMNH	LfCrI1	B62-323	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	82.3			s	no
OMNH	LfCrI1	B62-377	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	42.5	27.6		s	no
OMNH	LfCrI1	B62-332	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	58.3			s	no
OMNH	LfCrI1	B62-290	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	81.5			s	no
OMNH	Lf40/754		Craig Mnd.	*Busycon sinistrum*			1	cup	116.2		121	s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	113.8			s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	239.9	112.5		s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	224.8	87.4		s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	187.2	81.7		s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	206.9	135.3		s	no
OMNH	LfCrI1	B62-209	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	110.5	56		s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	145	85		s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	156.5			s	no
OMNH	Lf40/754		Craig Mnd.	*Busycon sinistrum*			1	cup	110.4		115	s	no
OMNH	Lf40/754		Craig Mnd.	*Busycon sinistrum*			1	cup	134.4		120	s	no
OMNH	LfCrI1	B62-7	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	246.6		120	s	no
OMNH	LfCrI1	B62-50	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	225.8			s	no
OMNH	LfCrI1	B62-13	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	311.6			s	no
OMNH	LfCrI1	B62-9a	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	253.1	198.2		s	no
OMNH	LfCrI1	B62-70	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	162.6			s	no
OMNH	LfCrI1	B62-67	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	122.7		122	s	no
OMNH	Lf40/754		Craig Mnd., tunnel	*Busycon sinistrum*			1	cup	123.4	77.9		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	100.1		125	s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	101.6	68.1		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	117.9			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	126.9	85.6		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	86.4	82.2		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	178.4			s	no
OMNH	LfCrI1	B62-317	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	82.8	43.3		s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	41.4		122	s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	34.4		110	s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	30.1			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	43.1			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	37.8		127	s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	41.6			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	130			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	74.4	53.9		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	52.5		126	s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	138			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	60.5		105	s	no
OMNH	LfCr11	B62-341	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	57.5	62		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	34.9		125	s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	85.4			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	46.4			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	198.5			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	67			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	102.3			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	102.2			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	63.9			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	153.5			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	124.8			s	no
OMNH	LfCr11	B62-328	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup	57.6	33.3		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	104.2	61.5		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	127.7	105.5		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	84			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	115.4			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	62.6			s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	120.5	97.6		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	51.5			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	86			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	50.7			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	75.1			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	68.5			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	76.2			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	96.4	62.8		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	101	59.1		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	108.7	72		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	121.7	56.8		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	71.4	58.3		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	125.4	92.5		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	105.7	67		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	140	109.8		s	no
OMNH	Lf40/833			*Busycon sinistrum*			1	cup	158.9	93.4		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	127.1	50.5		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	120.7	71.4		s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1	cup	77.9	61.1		s	no
OMNH	LfCrI1	B163-28	Craig Mnd., central floor	*Cassis madagascariensis*	yes		1	cup?				d	no
OMNH	LfCrI1	B8-10	Craig Mnd., NW cluster	*Phyllonotus pomum*	yes		1	cup?				d	no
OMNH	LfCrI1	B156-13	Craig Mnd., central floor	*Pleuroploca gigantea*	yes		1	cup?	108.4			d	no
Gilcrease	9025.1525	B23-51	Craig Mnd.	*Busycon sinistrum*	yes		1	cup?				s	no
Gilcrease	9025.1665	B23-21	Craig Mnd.	*Busycon sinistrum*	yes		1	cup?				s	no
Gilcrease	9025.1565	B23-38	Craig Mnd.	*Busycon sinistrum*	yes		1	cup?	180			s	no
OMNH	LfCrI1	B155-32	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup?	79.7	87.7		s	no
OMNH	Lf40/748	#748tunnel	Craig Mnd.	*Pleuroploca gigantea*			1	cup?	75	68.8		d	no
Gilcrease	9025.1732	B155-80	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup?			121	s	no
Gilcrease	9025.1482	B62-11b	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup?				s	no
Gilcrease	9025.1775	B155-63	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup?	189.2			s	no
Gilcrease	9025.1730	B155-89	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup?			115	s	no
Gilcrease	9025.1735	B155-84	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup?			115	s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
OMNH		B80-6	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup?	52.9			s	no
NMNH	A448884		Leflore Co.	*Pleuroploca gigantea*			1	cup?	199.3			d	no
Gilcrease	9025.1739	B155-67	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup?			117	s	no
OMNH	LfCrI1	B62-4	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup?	74.1	60.5		s	no
OMNH	LfCrI1	B62-221	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	cup?	88.8	62.7		s	no
Gilcrease	9025.600A			*Pleuroploca gigantea*			1	debitage	117			d	no
SMAP		955		*Busycon sinistrum*			1		158		110	s	no
OMNH	LfCrI	B5	Craig Mnd., NE cluster	*Busycon sinistrum*	yes		1		219			s	no
OMNH	LfCrI	stake 16:0	Craig Mnd.	*Busycon sinistrum*			1		178.4			s	no
Gilcrease	9025.1762	B155-62	Craig Mnd., central floor	*Busycon sinistrum*	yes		1		107.4		113	s	no
SMAP		955		*Busycon sinistrum*			1		161			s	no
OMNH	Lf40/833		Craig Mound	*Busycon sinistrum*			1		104	24		s	no
Gilcrease	9025.688			*Busycon sinistrum*			1	debitage	77.1			s	no
OMNH	Lf40-833		Craig Mnd.	*Busycon sinistrum*			1		52.8			s	no
OMNH	LfCrI1	B36-23	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	gorget	133.6	112		s	no
OMNH	LfCrI1	B108-9	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	gorget	190.8	192		s	no
OMNH	LfCrI1	B108-4	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	gorget	180.2	190		s	no
OMNH	LfCrI1	B62-2	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	gorget	150.5	99		s	no
NMNH	A448746		Leflore Co.	*Pleuroploca gigantea*			1	gorget	95.4			d	no
NMNH	A448772		Leflore Co.	*Busycon sinistrum*			1	gorget	208.3	108.8		s	no
OMNH	LfCrI	D302-1a	Craig Mnd., dump	*Busycon sinistrum*			1	gorget				s	no
Gilcrease	9025.537		Craig Mnd.	*Busycon sinistrum*			1	gorget	94.6			s	no
Gilcrease	9025.19			*Busycon sinistrum*			1	gorget	95	75		s	no
Gilcrease	9025.683	D-1	Craig Mnd., dump	*Busycon sinistrum*			1	gorget	142.8	146		s	no
Gilcrease	9025.538			*Busycon sinistrum*			1	gorget	100	85		s	no
Gilcrease	9025.1685	B108-112	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	gorget	93.8			s	no
OMNH	LfCrI1	D-2	Craig Mnd., dump	*Busycon sinistrum*			1	gorget	135.3	143.9		s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	195.4			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	169.3			s	no
NMNH	A448777		Leflore Co.	*Busycon sinistrum*			1	pendant	95			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	207.6			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	130			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	172.5			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	153.5			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	91.7			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	294.8			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	143.9			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	163.4			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	136.6			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	178.9			s	no
Gilcrease	9025.597			*Busycon sinistrum*			1	pendant	199.2		120	s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	182.4			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	135.1			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	169.1			s	no
NMNH	A448777		Leflore Co.	*Busycon sinistrum*			1	pendant	66.7			s	no
OMNH	LI40/954			*Busycon sinistrum*			1	pendant	92.6			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	157.3			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	194.4			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	98.1			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	154.2			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	154			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	140			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	140			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	176.4			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	183			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	194.6			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	133.4			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	138.7			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	184.3			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	171.5			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	224.5			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	196			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	120.5			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	156			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	256.8			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	77.1			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	140.6			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	168.5			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	149.2			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	221.5			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	188.8			s	no
NMAI	22/358A		Leflore Co.	*Busycon sinistrum*			1	pendant	186			s	no
NMAI	22/358A		Leflore Co.	*Busycon sinistrum*			1	pendant	226.5			s	no
SMAP		955		*Busycon sinistrum*			1	pendant	267		125	s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	131.4			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	139.5			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	212.8			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	203.5			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	190.5			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	147			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	143.4			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	114.8			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	198.2			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	189.1			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	174.6			s	no
NMNH	A448781		Leflore Co.	*Pleuroploca gigantea*			1	pendant	163			d	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	184.2			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	95.3			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	177.5			s	no
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	175.3			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
NMNH	A448781		Leflore Co.	*Busycon sinistrum*			1	pendant	147.4			s	no
OMNH	LfCrI	B108-36	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	pendant	165.3			s	no
OMNH	LfCrI1	A11-6	Craig Mnd., NW cluster	*Busycon sinistrum*			1	pendant	187.5			s	no
OMNH	LfCrI1	A6-35	Craig Mnd., NW cluster	*Busycon sinistrum*			1	pendant	106.4			s	no
NMNH	A448780		Leflore Co.	*Busycon sinistrum*			1	pendant	91.5			s	no
OMNH	LfCrI1	A6-33	Craig Mnd., NW cluster	*Busycon sinistrum*			1	pendant	74.2			s	no
NMNH	A448777		Leflore Co.	*Busycon sinistrum*			1	pendant	59.6			s	no
OMNH	LfCrI1	A16-3	Craig Mnd., central floor	*Busycon sinistrum*			1	pendant	131.6			s	no
OMNH		D304-1i	Craig Mnd., dump	*Crassostrea virginica*			1	pendant	102.9	47.1			no
OMNH	LfCrI1	D250-20	Craig Mnd., dump	*Oliva* cf. *sayana*			1	pendant	52.5	18.8		d	no
OMNH	LfCrI1	D222	Craig Mnd., dump	*Anadara transversa*			1	pendant	28.3	21			no
OMNH	Lf40/18	B62	Craig Mnd., central floor	*Crassostrea virginica*	yes		1	pendant	86.1	31.5			no
OMNH	LfCrI	B108-38	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	pendant	168.6			s	no
NMNH	A448779		Leflore Co.	*Busycon sinistrum*			1	pendant	219.4			s	no
OMNH	LfCrI	B108-30	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	pendant	111.5			s	no
OMNH	LfCrI1	A6-34	Craig Mnd., NW cluster	*Busycon sinistrum*			1	pendant	188.5		106	s	no
OMNH	LfCrI	B108-29	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	pendant	139.1			s	no
OMNH	LfCrI	B108-27	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	pendant	71.8			s	no
OMNH	LfCrI	B108-24	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	pendant	190.2			s	no
OMNH	LfCrII	B108-34	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	pendant	67.8			s	no
OMNH	LfCrI1	B108-34	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	pendant	153.3			s	no
OMNH	Lf40/954			*Busycon sinistrum*			1	pendant	57.5			s	no
OMNH	Lf40/952b	A/77/2/1	Craig Mnd.	*Fasciolariidae*			1	pendant				d	no
OMNH	Lf40/952b	A/77/2/1	Craig Mnd.	*Busycon sinistrum*			2	pendant				s	no
OMNH	Lf40/953m		Craig Mnd.	*Oliva* spp.			1	pendant				d	no
OMNH	Lf40/953m		Craig Mnd.	*Busycon sinistrum*			7	pendant				s	no
Gilcrease	9025.540B			*Busycon sinistrum*			1	pendant	77.9		107	s	no
Gilcrease	9025.540A			*Busycon sinistrum*			1	pendagt	103.7			s	no
Gilcrease	9025.523			*Busycon sinistrum*			1	pendant	104.7		105	s	no
Gilcrease	9025.684			*Busycon sinistrum*			1	pendant	241.1		117	s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
OMNH	LRCrl	B108-35	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	pendant	109			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	129.5			s	no
NMNH	A448778		Leflore Co.	*Busycon sinistrum*			1	pendant	172			s	no
NMNH	A423231	112735	Leflore Co.	*Busycon spp.*			1	pendant	66.8		94	d	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	131.3			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	213.8			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	154.3			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	190			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	136.7			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	183.9			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	140.3			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	143.4			s	no
NMNH	A448779		Leflore Co.	*Busycon sinistrum*			1	pendant	184.4			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	187.2			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	178.1			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	235.7			s	no
NMNH	A448779		Leflore Co.	*Busycon sinistrum*			1	pendant	190.4			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	187.9			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	168.1			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	168.8			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	233.7			s	no
NMNH	A448779		Leflore Co.	*Busycon sinistrum*			1	pendant	185			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	170.5			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	216			s	no
NMNH	A448779		Leflore Co.	*Busycon sinistrum*			1	pendant	223			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	160			s	no
NMNH	A448779		Leflore Co.	*Busycon sinistrum*			1	pendant	199.4			s	no
NMNH	A423305		Leflore Co.	*Busycon sinistrum*			1	pendant	200			s	no
NMNH	A448779		Leflore Co.	*Busycon sinistrum*			1	pendant	248.2			s	no
NMNH	A448779		Leflore Co.	*Busycon sinistrum*			1	pendant	232.3			s	no

Housed	Catalog #	Access. #	Provenience	Taxon	Burial	M/F	#	Artifact	Length (mm)	Width (mm)	Apex Angle	S/D	Burned
NMNH	A448768		Leflore Co.	*Oliva* spp.			1	pendant?				d	no
OMNH	LfCr11	B88-7	Craig Mnd., SW unit	*Busycon sinistrum*	yes		1	pendant?	73.2			s	no
OMNH	Lf40/951j		Craig Mnd.	cf. *Thais*			1	pendant?				d	no
OMNH	LfCr11	B62-436	Craig Mnd., central floor	*Oliva* spp.	yes		1	pendant?				d	no
OMNH	LfCr11	B10	Craig Mnd., central flank zone	*Busycon sinistrum*	yes		1	pendant?	200			s	no
OMNH	LfCr1	B158-3	Craig Mnd., central floor	*Busycon sinistrum*	yes		1	pendant?	178.4			s	no
OMNH	Lf40-833		Craig Mnd.	*Pleuroploca gigantea*			1		78.4			d	no

Eng. = Engraved

Cahokia

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
ILMNH	A447	5117	*Fasciolaria tulipa*	not worked		no
ILMNH	A448	5117	*Strombus alatus*	smooth-shouldered, no knobs		no
ILMNH	A335	5099/5117	*Strombus* cf. *costatus*	small knobs	apex, spire only	no
ILMNH	A450	5117	*Littorina irrorata*	Moorehead, not a bead		no
LOA/UI	A3996		*Oliva* spp.	fragments	apex	no
ILMNH	A2389		*Marginella* cf. *apicina*	coll. Dec. 1930		no
LOA/UI	A3997		*Oliva* spp.	fragments	apex	no
ISM		71-1509-7	*Pleuroploca gigantea*	Fowler 1971, principle figure	columella bead w/groove	no
LOA/UI	A3495		*Marginella* spp.	many in matrix, coll. 29 Dec 1930		no
ILMNH	A2392		*Marginella* cf. *apicina*	in matrix		no
ILMNH	A2374		*Marginella* cf. *apicina*			no
NMAI	21/9799		*Marginella* spp.			no
LOA/UI	A3996		*Oliva* spp.	fragments	columella	no
LOA/UI	A3997		*Oliva* spp.	fragments	siph canal & lip	no
LOA/UI	A3997		*Oliva* spp.	fragments	columella & siph canal	no
NMAI	22/23		*Busycon sinistrum*	large cylinder	columella	no
LOA/UI	A3997		*Oliva* spp.	fragments		no
LOA/UI	A3997		*Oliva* spp.	fragments	outer lip	no
LOA/UI	A3996		*Oliva* spp.	fragments	lip	no
ISM	71-1509-14			large barrel		no
ISM			*Oliva* spp.	Fowler 1971, 935-1050 AD, apex gone for stringing	whole, but apex gone	no
LOA/UI	A336	5099/5117	*Oliva* cf. *sayana*	apex broken, Moorehead 1929 pl VIII		no
ISM		71-1509-3	*Busycon sinistrum*	Fowler 1971, 935-1050 AD	columella bead	no
LOA/UI	13542		*Busycon sinistrum*	barrel		no
LOA/UI	13542		*Busycon sinistrum*	barrel		no
LOA/UI	13542		*Busycon sinistrum*	barrel		no
LOA/UI	A106	5099/5117	*Marginella* cf. *apicina*			no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
ISM	71-1509-3			large cylinder		no
ISM	71-1509-7			large cylinder		no
ISM	71-1509-7			large cylinder		no
ILMNH	A2368		*Oliva* cf. *sayana*	apex ground off		no
ISM	71-1509-14			large barrel,		no
ISM	71-1509-16			large barrel, exc. 1971		no
LOA/UI	A191	5099/5117	*Marginella* cf. *apicina*			no
LOA/UI	A228	5099/5117	*Marginella* cf. *apicina*			no
LOA/UI	13542		*Busycon sinistrum*	barrel		no
LOA/UI	13542		*Busycon sinistrum*	barrel		no
ILMNH	A2368		*Oliva* cf. *sayana*	apex ground off		no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on both ends	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on both ends	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on both ends	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on both ends	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on both ends	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on both ends	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on anterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on posterior end	columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, cut on anterior end	columella	no
ISM		71-1509-16	*Busycon sinistrum*	Fowler 1971, 935-1050 AD	columella, w/groove	no
ISM		71-1509-16	*Busycon* cf. *sinistrum*	Fowler 1971, 935-1050 AD	columella, w/out groove	no
ILMNH	MA129	5099/5117	*Busycon sinistrum*	gracile, cut columella		no
ILMNH	MA441	5117	*Busycon sinistrum*	sanded, spire&apex gone		no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	whole shell	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Pleuroploca gigantea*	1956 Perino excavations	no apex	no
ISM		1958-91	*Thais haemostoma*	1956 Perino excavations,,very disintegrated	whole shell	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	post. 1/2 of shell w/ant. columella burned	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	whole shell?	no
ISM		1958-91	*Thais haemostoma*	1956 Perino excavations, very disintegrated	whole shell	no
ISM		1958-91	*Strombus alatus*	1956 Perino excavations	whole shell	no
ISM		1958-91	*Busycotypus spiratus*	1956 Perino excavations	whole shell	no
ISM		1958-91	*Pleuroploca gigantea*	1956 Perino excavations	outer whorl	no
ISM		1958-91	*Busycotypus spiratus*	1956 Perino excavations	whole shell	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection	columella, outer whorl, apex	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	post. 1/2 of shell w/ant. columella burned	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	post. 1/2 of shell w/ant. columella burned	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	partial shoulder & apex	no
ISM		1958-91	*Mercenaria* spp.	1956 Perino excavations	whole	no
ISM		1958-91	*Pleuroploca gigantea*	1956 Perino excavations	whole?	no
ISM		1958-91	*Pleuroploca gigantea*	1956 Perino excavations	whole?	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
ISM		1958-91	*Pleuroploca gigantea*	1956 Perino excavations	whole?	no
ISM		1958-91	*Fasciolaria* spp.	1956 Perino excavations	columella & partial outer whorl	no
ISM		1958-91	*Strombus alatus*	1956 Perino excavations	whole	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection	apex, 1/2 columella, partial body	no
ISM		1958-91	*Pleuroploca gigantea*	1956 Perino excavations	mid-section columella	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycotypus spiratus*	1956 Perino excavations	whole shell	no
ISM		1958-91	cf. *Pleuroploca gigantea*	1956 Perino excavations, 1.5 cm thick	portion of outer whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Conus* cf. *spurius atlanticus*	1956 Perino excavations	all but apex, outer whorls	no
ISM		1958-91	*Conus* cf. *spurius atlanticus*	1956 Perino excavations	all but apex, outer whorls	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	all but post. 1/2 columella	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	all but ant. 1/2 columella, outer whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + part body, no apex tip	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection	apex, outer whorl, posterior 1/2 columella	no
ISM		1958-91	*Busycotypus spiratus*	1956 Perino excavations	all but apex	no
ISM		1958-91	*Busycotypus spiratus*	1956 Perino excavations	post. 1/2 of valve	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycotypus spiratus*	1956 Perino excavations	whole shell	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	whorl frags - n=22	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	apex & partial columella	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	apex & partial columella	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	apex & partial columella	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	apex & partial columella	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	apex only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	apex & partial columella	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	apex & partial columella	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	apex & partial columella	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	apex & partial columella	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	whole shell	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no

Housed	Catalog #	Accoss. #	Taxon	Comments	Elements	Eng.
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex & partial body	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1955-59	*Cassis* spp.	Preston Holder Collection	siphonal canal & partial whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations, drilled	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations, rodent gnawed	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations, rodent gnawed	apex + partial body only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1973-53	*Marginella* spp.	1973 CMMS Arch. field school, field #73-530	anterior 1/2 of valve	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Pleuroploca gigantea*	1956 Perino excavations	columella	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	apex only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella, apex and partial body whorl	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	lower 1/2 columella + partial outer whorl	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	lower 1/2 columella + partial outer whorl	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	mid-columella + outer whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, shell #8	columella, outer whorl	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, shell #9	apex, partial body, partial columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, shell #6	apex, partial body, partial columella	no
ISM		1955-59	*Busycon sinistrum*	Preston Holder Collection, shell #5	apex, partial body, partial columella	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	lower 1/2 columella + partial outer whorl	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella + body whorl	no
LOA/UI	A689	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A164	5099/5117	*Busycon sinistrum*		apex frag	no
LOA/UI	A4682		*Busycon sinistrum*		columella only	no
LOA/UI	Bag #72		*Busycon sinistrum*		apex	no
LOA/UI	Bag #72		*Busycon sinistrum*		columella only	no
LOA/UI	A445	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A445	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A445	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A445	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A445	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A445	5117	*Busycon sinistrum*		columella only	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
LOA/UI	A4682		*Busycon sinistrum*		apex only	no
LOA/UI	A689	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A200	5099/5117	*Busycon sinistrum*		outer whorl	no
LOA/UI	A689	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A689	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A689	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A689	5117	*Busycon sinistrum*	cut anteriorly	columella only	no
LOA/UI	A689	5117	*Busycon sinistrum*	boring sponge holes, *Clione*	columella only	no
LOA/UI	A689	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A444	5117	*Busycon sinistrum*		apex, spire, part columella	no
LOA/UI	A69	5099/5117	*Busycon sinistrum*		mostly whole	no
LOA/UI	A69	5099/5117	*Busycon sinistrum*		mostly whole	no
LOA/UI	A4682		*Busycon sinistrum*		columella only	no
LOA/UI	A4682		*Busycon sinistrum*		columella only	no
LOA/UI	A201	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A689	5117	*Busycon sinistrum*		columella only	no
LOA/UI	A39	5099/5117	*Busycon sinistrum*	cut columella?	columella only	no
LOA/UI	A201	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A201	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A201	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A39	5099/5117	*Busycon sinistrum*	cut columella?	columella only	no
LOA/UI	A39	5099/5117	*Busycon sinistrum*	cut columella?	columella only	no
LOA/UI	A39	5099/5117	*Busycon sinistrum*	cut columella?	columella only	no
LOA/UI	A39	5099/5117	*Busycon sinistrum*	cut columella?	columella only	no
LOA/UI	A39	5099/5117	*Busycon sinistrum*	cut columella?	columella only	no
LOA/UI	A39	5099/5117	*Busycon sinistrum*	cut columella?	columella only	no
LOA/UI	A39	5099/5117	*Busycon sinistrum*	cut columella?	columella only	no
LOA/UI	A100	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A39	5099/5117	*Busycon sinistrum*	cut columella?	columella only	no
LOA/UI	A200	5099/5117	*Busycon sinistrum*		outer whorl	no
LOA/UI	A3517	Kelly exc.	*Busycon sinistrum*		columella only	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
LOA/UI	A254	5099/5117	*Busycon sinistrum*		inner whorl only	no
LOA/UI	A254	5099/5117	*Busycon sinistrum*		apex, columella	no
LOA/UI	A254	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A254	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A282	5099/5117	*Busycon sinistrum*		columella & inner whorl	no
LOA/UI	A199	5099/5117	*Busycon sinistrum*	Moorehead's field notes July 1936	columella, apex	no
LOA/UI	A129	5099/5117	*Busycon sinistrum*		inner whorl	no
LOA/UI	A201	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A200	5099/5117	*Busycon sinistrum*		columella, apex	no
LOA/UI	A200	5099/5117	*Busycon sinistrum*		outer whorl	no
LOA/UI	A200	5099/5117	*Busycon sinistrum*		outer whorl	no
LOA/UI	A39	5099/5117	*Busycon sinistrum*	cut columella?	columella only	no
ILMNH	A449	5117	*Busycotypus* cf. *spiratus*	columella tip broken		no
ISM		1958-91	*Busycon* cf. *sinistrum*	1956 Perino excavations	mid-columella + outer whorl	no
LOA/UI	13542		*Busycon sinistrum*	whorl broken out (10x10cm)	whole	no
LOA/UI	13542		*Busycon sinistrum*		columella, inner whorl frag	no
LOA/UI	13542		*Busycon sinistrum*		columella, inner whorl frag	no
LOA/UI	13542		*Busycon sinistrum*		columella, inner whorl frag, apex	no
LOA/UI	13542		*Busycon sinistrum*			no
LOA/UI	A3997		*Busycon sinistrum*		columella only	no
LOA/UI	A443	5117	*Busycon sinistrum*		columella, apex	no
LOA/UI	A333	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A333	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	13542		*Busycon sinistrum*		outer whorl & lip	no
ILMNH	A38	5099/5117	*Busycon sinistrum*	Moorehead 1922	columella, part inner whorl	no
LOA/UI	13542		*Busycon sinistrum*	exposed by machinery	columella, part inner whorl	no
ILMNH	A38	5099/5117	*Busycon sinistrum*	Moorehead 1922	apex, posterior 1/2	no
ILMNH	A446	5117	*Pleuroploca gigantea*	used as hammer?	columella only	no
ILMNH	A2390		*Busycon sinistrum*		columella only	no
ILMNH	MA442	5117	*Busycon sinistrum*	1922 Moorehead	columella, apex, part inner whorl	no
ISM		1958-91	*Phalium* cf. *granulatum*	1956 Perino excavations	outer lip only	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	apex, post. 1/2 columella, partial post. whorls	no
ISM		1958-91	*Pleuroploca gigantea*	1956 Perino excavations	post. whorls, no apex	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Fasciolaria* spp.	1956 Perino excavations	whole shell	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations	columella only	no
LOA/UI	A333	5099/5117	*Busycon sinistrum*		apex, part columella	no
LOA/UI	A163	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A70	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A70	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A70	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A70	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A70	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A70	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A70	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A128	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A128	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	Bag149		*Busycon sinistrum*		columella only	no
LOA/UI	13542		*Busycon sinistrum*		inner whorl frag.	no
LOA/UI	A163	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A4682		*Busycon sinistrum*		columella only	no
LOA/UI	A202	5099/5117	*Busycon sinistrum*		inner whorl	no
LOA/UI	A202	5099/5117	*Busycon sinistrum*		inner whorl	no
LOA/UI	A202	5099/5117	*Busycon sinistrum*		inner whorl	no
LOA/UI	A101	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A101	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A101	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A101	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A101	5099/5117	*Busycon sinistrum*		columella only	no
LOA/UI	A101	5099/5117	*Busycon sinistrum*		columella only	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
LOA/UI	A101	5099/5117	*Busycon sinistrum*	cut	columella only	no
LOA/UI	A101	5099/5117	*Busycon sinistrum*	cut	columella only	no
LOA/UI	A101	5099/5117	*Busycon sinistrum*	cut	columella only	no
LOA/UI	A101	5099/5117	*Busycon sinistrum*	cut	columella only	no
LOA/UI	Bag149		*Busycon sinistrum*		columella only	no
LOA/UI	A4682		*Busycon sinistrum*		columella only	no
NMAI	21/9774		*Busycon sinistrum*	J. Arch. Society 1949	columella only	no
ISM		1958-91	*Macrocallista nimbosa*	1956 Perino excavations	L hinge w/umbo	no
NMAI	21/9774		*Busycon sinistrum*	J. Arch. Society 1949	columella only	no
ISM		1958-91	*Marginella* spp.	1956 Perino excavations	lower 1/2 of valve	no
ITARP			*Busycon sinistrum*	cross design, just east of Monks mound, exc by Bareis	outer whorl	yes
ISM			*Busycotypus spiratus*	Fowler 1971, 935-1050 AD	apex only	no
ISM		1958-91	*Busycotypus spiratus*	1956 Perino excavations, drill hole=2.2mm	outer whorl, apex	no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations,, drilled caudal end	outer whorl, apex	no
ILMNH	MA443	5117	*Busycon sinistrum*	columella tip scored for stringing	apex, columella	no
ILMNH	MA25483		*Busycon sinistrum*	outer whorl removed		no
ISM		1958-91	*Busycon sinistrum*	1956 Perino excavations, drilled anterior end	outer whorl, apex	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, part. spire	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A082462		*Busycon sinistrum*	Cyrus Thomas & Powell	columella, frag outer whorl	no
NMNH	A218401		*Busycon sinistrum*	drilled (1), not archaeological?	apex, spire	no
Etowah						
RSPM	90.77.9		*Busycon sinistrum*	Moorehead 1932, fig 58d-spoon	columella & part inner whorl	no
RSPM	61460		*Pleuroploca gigantea*		whole	no
NMNH	A170813		*Busycon sinistrum*	barrel	columella	no
NMNH	A170811		*Busycon sinistrum*	large barrel		no
RSPM	62010		*Busycon* cf. *carica*		columella	no
NMNH	A170811			large barrel		no
NMNH	A170815		*Busycon* cf. *carica*	med. barrel		no
NMNH	A171319		*Oliva* spp.	apex gone for stringing		no
RSPM	68266	61505	*Marginella* spp.	spire ground off		no
NMNH	A170812		*Busycon sinistrum*	large barrel		no
NMNH	A214760		*Busycon sinistrum*	large barrel		no
NMNH	A214760			large barrel		no
RSPM	62027		*Marginella* spp.			no
NMNH	A170813			barrel	columella	no
RSPM	62020		*Busycon sinistrum*	large barrel	columella	no
RSPM	61491		*Busycon sinistrum*			no
RSPM	62020		*Busycon sinistrum*	large barrel	columella	no
NMNH	A170825		*Busycon* cf. *sinistrum*	large barrel		no
RSPM	62026		*Busycon sinistrum*	large columella, drilled		no
RSPM	61457		*Busycon sinistrum*	sanded, cut columella		no
NMNH	A214759	38007	*Busycon sinistrum*	sanded, whole		no
RSPM	61457		*Busycon sinistrum*	sanded, cut columella, ant 1/3 gone		no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
NMNH	A170836		*Busycon sinistrum*	sanded, columella cut off		no
RSPM	61458		*Busycon sinistrum*	"killed"?, cut columella		no
RSPM	61458		*Busycon sinistrum*	cut columella		no
RSPM	61459		*Busycon sinistrum*	sanded, cut columella		no
RSPM	62026		*Busycon sinistrum*		outer whorl frag.	no
RSPM	61958		cf. *Pleuroploca gigantea*			no
NMNH	A170866		*Busycon sinistrum*	sanded, apex gone, columella complete	whole	no
NMNH	A170866		*Busycon sinistrum*		columella, inner whorl	no
NMNH	A417908		*Busycon sinistrum*		columella	no
RSPM	61477		*Busycon sinistrum*	badly deteriorating	columella	no
RSPM	62009		*Busycon sinistrum*		columella, frag spire, outer whorl	no
RSPM	61442		*Pleuroploca gigantea*		columella only	no
RSPM	61372		*Busycon sinistrum*	2 birds facing pole, convex	outer whorl	yes
RSPM	61932		*Busycon sinistrum*	citico, sinistral snake, concave		yes
RSPM	61425		*Busycon sinistrum*	citico	outer whorl	yes
NMNH	A170834		*Busycon* cf. *sinistrum*	serpent design		yes
RSPM	61382		*Busycon sinistrum*	clearly sinistral		yes
RSPM	82/R121		*Pleuroploca gigantea*			no
RSPM	61813		*Busycon sinistrum*			no
NMNH	171155-0	37113	*Busycon sinistrum*	good specimen	columella	no
NMNH	171157-0	37113	*Pleuroploca gigantea*	good specimen	columella	no
RSPM	61814		*Busycon sinistrum*	whole		no
RSPM	61814		*Busycon sinistrum*	whole		no
RSPM	61815		*Busycon* cf. *carica*			no
RSPM	82/R122		*Pleuroploca gigantea*			no
RSPM	61956		cf. *Busycon carica*	both broken		no
NMNH	A171156	37113	*Busycon sinistrum*		columella	no
RSPM	61956		cf. *Busycon carica*	both broken		no
NMNH	A171158	37113	*Busycon sinistrum*		columella	no
RSPM			*Busycon sinistrum*	juv 5-7 yrs.		no
RSPM				juv 5-7 yrs.		no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
RSPM	61820		*Busycon sinistrum*		siph canal only	no
RSPM			*Busycon sinistrum*	Moorehead 1932:fig 58e	columella only	no
RSPM	61844		*Busycon sinistrum*	rattlesnake?, concave, whole		yes
RSPM	61888		*Busycon sinistrum*	rattlesnake?, concave		yes
RSPM	61841		*Busycon sinistrum*	rattlesnake?, concave		yes
RSPM	82/R124	89.1/10	*Busycon sinistrum*	rattlesnake?, concave		yes
RSPM	61889		*Busycon sinistrum*	rattlesnake?, concave		yes
RSPM	61809		*Busycon sinistrum*	rattlesnake?, concave		yes
RSPM	61933		*Busycon sinistrum*	rattlesnake?, concave		yes
RSPM	82/r122		*Busycon sinistrum*			no
RSPM	82/r120		*Busycon sinistrum*			no
RSPM			*Pleuroploca gigantea*	thin part broken off		no
RSPM	61815		*Busycon sinistrum*			no
RSPM	61814		*Busycon sinistrum*	mostly whole		no

Moundville

AMNH	MWP57	A936.1.198	*Fasciolaria spp.*		columella, apex tip	no
AMNH	M SW 33	A936.2.55	*Busycon sinistrum*	apex gone	outer whorl, columella, spire	no
AMNH	MWP57	A936.1.198	*Busycon sinistrum*	lirate	apex, columella	no
AMNH	MEE 105	A.931.1.37	*Busycon sinistrum*		apex tip	no
NMNH	82361		*Busycon sinistrum*	Steponaitis 1983, Fig. 15	whole	no
AMNH	Rho 115	A930.2.274	*Busycon sinistrum*	27, 32.8, 25mm. very large!	columella	no
AMNH	WP179	A936.1.190	*Busycon sinistrum*	large barrel	columella	no
AMNH	MNG 34	A930.5.56	*Oliva* spp.	5 MNI: 3 siphonal canal + 2 siphonal canal/outer whorl	outer whorl, siphonal canal	no
AMNH	MSWM 250	A930.3.193			columella	no
AMNH	WP175	A936.1.187	*Busycon sinistrum*		columella	no
AMNH	MSWM 250	A930.3.193			columella	no
NMAI	17/1045		*Busycon sinistrum*	C.B. Moore	periqstracum, columella present	yes
NMAI	17/1044		*Busycon sinistrum*	C.B. Moore	shoulder & lip	yes
NMAI	17/1044		*Busycon sinistrum*	C.B. Moore	spire only	yes

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
AMNH	Mi 1199	A941.4.516	*Busycon sinistrum*	sanded	outer whorl frag. w/lip	no
NMAI	17/1044		*Busycon sinistrum*	C.B. Moore	outer whorl only	yes
AMNH	MEE264	A931.1.334	*Busycon sinistrum*	w/ear spool, awl, bear tooth	outer whorl	no
NMAI	17/1039		*Busycon sinistrum*	design on concave, cross & scallop, see notes	outer whorl	yes
AMNH	EE245		*Busycon sinistrum*	design on concave side	outer whorl	yes
AMNH	MEE265	A931.1.335	*Busycon sinistrum*	w/ear spool, awl, bear tooth	outer whorl	no
AMNH	MEE 332	A931.1.336	*Busycon sinistrum*	"rattlesnake gorget" = tie snake	outer whorl	yes
AMNH	MSWM 202	A930.3.140	*Oliva* spp.	apex tip gone for stringing	outer whorl, siphonal canal	no
AMNH	SWM 271	A930.3.168	*Pleuroploca gigantea*		columella only	no
AMNH	Md Rdway		*Busycon* cf. *sinistrum*		columella only	no
Spiro						
Gilcrease	9025.599d		*Busycon sinistrum*	not sanded, no apex	spire, post. 1/2 columella + outer whorl	no
OMNH	LfCrl	B80-6	*Cassis madagascariensis*		lip only	no
Gilcrease	9025.1733	B155-83	*Busycon sinistrum*		apex, spire	no
Gilcrease	9025.1778	B155-76	*Busycon sinistrum*	sanded, one drill hole	apex, spire only	no
NMNH	A448885		*Cassis* spp.		inner whorl	no
NMNH	A448776		*Haliotis cracherodii*	unworked	whole	no
Gilcrease	9025.599C		*Busycon sinistrum*	not sanded	ant. 1/2 columella + part. outer whorl	no
NMNH	A423302		*Cassis* spp.	large circular piece removed?	lip only	no
Gilcrease	9025.599F		*Busycon sinistrum*	no apex	outer whorl, columella	no
Gilcrease	9025.1740	B155-68		sanded	apex + spire only	no
Gilcrease	9025.599G		*Busycon sinistrum*	ant. 1/4 columella gone	apex, spire, outer whorl, columella	no
Gilcrease	9025.1754	B155-91	*Busycon sinistrum*	pieces gone, no apex	whole, columella, outer whorl, spire	no
OMNH		B62	*Cassis madagascariensis*	sanded, lip only	lip only	no
NMNH	A448885		*Cassis* spp.	drilled, 7 holes	lip only	no
OMNH	LfCrl1	B62-255	*Cassis madagascariensis*		siphonal canal only	no
NMNH	A448885		*Cassis* spp.		lip only	no
SMAP		955	*Busycon sinistrum*			no
Gilcrease	9025.1760	B155-86	*Busycon sinistrum*	posterior 1/2, juvenile, lirate	apex, columella	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
Gilcrease	9025.1761	B155-95	*Busycon sinistrum*	posterior 1/2, juvenile	apex, columella	no
Gilcrease	9025.1763	B155-93	*Busycon sinistrum*	lirate	spire, columella, outer whorl	no
OMNH	LfCrl1	B62-105	*Fasciolaria tulipa*		whole	no
Gilcrease	9025.1774	B155-65	*Busycon sinistrum*	drilled near columella on outer whorl	outer whorl only	no
OMNH	LfCrl1	B155-16	*Busycon sinistrum*	spire w/short, knobby spines, 4 drill holes. . .	whole?	no
SMAP		955	*Busycon sinistrum*	sanded		no
Gilcrease	9025.1595	B62-154	*Busycon sinistrum*			yes
OMNH	LfCrl1	B145-18	*Phyllonotus pomum*		whole	no
NMNH	A448885		*Cassis* spp.		lip + outer whorl	no
NMNH	A448885		*Pleuroploca gigantea*		apex, spire, posterior 1/2 columella	no
Gilcrease	9025.600B		*Busycon sinistrum*		columella w/part. outer whorl	no
OMNH	LfCrl1	B62-456	*Busycon sinistrum*	sanded, siphonal canal gone, not a cup	apex, shoulder, spire, outer whorl	no
NMNH	A448775		*Dinocardium robustum*	unworked		no
OMNH	LfCrl1	D81-8	*Dinocardium robustum*	fragment only	valve frag.	no
NMAI	18/9081		*Cassis madagascariensis*	J.B. Clemens, 10 drill holes along lip	lip	no
NMAI	18/9080		*Cassis madagascariensis*	J.B. Clemens, scallop along lip	lip	yes
OMNH	LfCrl1	A16-7	*Busycon sinistrum*	sanded	apex + spire	no
NMNH	A448782		*Busycon sinistrum*	whole shell	whole	no
NMNH	A448872		*Busycon sinistrum*	siphonal canal broken, some corrosion	whole	no
NMNH	A423302		*Cassis* spp.		lip only	no
Gilcrease	9025.599B		*Busycon sinistrum*		outer whorl, mid-part columella	no
Gilcrease	9025.1743	B155-87	*Busycon sinistrum*	sanded	columella + part. outer whorl	yes
Gilcrease	9025.1742	B155-64	*Busycon sinistrum*		post. 12 columella, apex + part. outer whorl	no
NMNH	A448774		*Pleuroploca gigantea*	columella cut off	apex, spire	no
Gilcrease	9025.1744	B155-75	*Busycon sinistrum*		columella w/part. outer whorl	no
NMNH	A448885		*Cassis* spp		lip only	no
OMNH	LfCrl1	A11-34	*Busycon sinistrum*	sanded, whole (with columella)	apex, shoulder, spire, outer whorl, columella	no
Gilcrease	9025.1726	B155-69	*Busycon sinistrum*	sanded	outer whorl only	no
Gilcrease	9025.1777	B155-74	*Busycon sinistrum*	sanded	apex,+ spire only	no
OMNH	LfCrl1	A11-26	*Busycon sinistrum*	sanded, whole (unmodified)	apex, shoulder, spire, outer whorl, columella	no
OMNH	LfCrl1	A6-13	*Busycon sinistrum*	sanded, burned inner whorls, ventral area	apex, spire, columella, inner + outer whorls	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	LfCrl1	B150-2	*Busycon sinistrum*	whole (with columella)	apex, shoulder, spire, outer whorl, columella	no
Gilcrease	9025.669		*Olivella* spp.	n=108	whole shell	no
Gilcrease	9025.649		*Busycon sinistrum*	n=2, large sphere	columella	no
Gilcrease	9025.619		*Busycon sinistrum*	n=23, medium barrel	columella	no
Gilcrease	9025.649		*Pleuroploca gigantea*	n=2, large sphere	columella	no
Gilcrease	9025.670		*Olivella* spp.	n=88		no
Gilcrease	9025.671		*Pleuroploca gigantea*	n=2	columella	no
Gilcrease	9025.405		*Pleuroploca gigantea*	n=6	columella	no
OMNH	Lf40/953b		*Marginella* spp.	12.2-14.8mm, not M. apicina-size. M. carnea? 1200ml	whole	no
OMNH		B145-156	*Busycon sinistrum*	n=20, "convexo-cylindrical"	columella	no
OMNH	Lf40/950d		*Busycon sinistrum*	n=11	columella	no
Gilcrease	9025.405		*Busycon sinistrum*	n=18	columella	no
Gilcrease	9025.648		*Busycon sinistrum*	n=15, large sphere	columella	no
OMNH	Lf40/950f		*Busycon sinistrum*	drilled columella bead	columella	no
Gilcrease	9025.688		*Olivella* spp.	n=102		no
OMNH	Lf40/953d		*Pleuroploca gigantea*	large barrel, n=1	columella	no
Gilcrease	9025.406		*Pleuroploca gigantea*	n=1, large barrel	columella	no
Gilcrease	9025.408		*Pleuroploca gigantea*	n=1, large sphere	columella	no
Gilcrease	9025.408		*Busycon sinistrum*	n=12, large sphere	columella	no
OMNH	Lf40/953f		*Busycon sinistrum*	med/small barrel	columella	no
OMNH	Lf40/953d		*Busycon sinistrum*	med. barrel, n=51	columella	no
Gilcrease	9025.651		*Busycon sinistrum*	n=42, large sphere	columella	no
Gilcrease	9025.801		*Busycon sinistrum*	n=26	columella	no
OMNH	Lf40/953d		*Busycon sinistrum*	large barrel, n=24	columella	no
OMNH	Lf40/953f		*Busycon sinistrum*	med/large barrel, n=117	columella	no
OMNH	Lf40/953f		*Pleuroploca gigantea*	med/large barrel, n=1	columella	no
Gilcrease	9025.650		*Busycon sinistrum*	n=32, large sphere	columella	no
Gilcrease	9025.406		*Busycon sinistrum*	n=26, large barrel	columella	no
OMNH	Lf40/953d		*Pleuroploca gigantea*	med. barrel, n=23	columella	no
Gilcrease	9025.650		*Pleuroploca gigantea*	n=3, large sphere	columella	no
Gilcrease	9025.801		*Pleuroploca gigantea*	n=9	columella	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	Lf40/953c		*Olivella biplicata*	apex ground off, 1100mm, pinkish-purple on outer whorl	whole	no
OMNH	Lf40/953d			n=4 sinistral, 1 dextral	columella	no
OMNH	Lf40/953g		*Busycon sinistrum*	n=3 sinistral	columella	no
OMNH	Lf40/953f		*Busycon sinistrum*		columella	no
NMNH	A423325		*Olivella* spp.	apex cut for stringing		no
OMNH	Lf40/953f		*Busycon sinistrum*		columella	no
OMNH	Lf40/953f		*Busycon sinistrum*		columella	no
OMNH	Lf40/953f		*Busycon sinistrum*		columella	no
OMNH	Lf40/953f				columella	no
OMNH	Lf40/953f			medium barrel, 10-15mm avg. length	columella	no
OMNH	Lf40/953f				columella	no
OMNH	Lf40/953f				columella	no
OMNH	LfCrI	B49-5	*Busycon sinistrum*	burned black	columella	no
OMNH	Lf40/950r		*Busycon sinistrum*	n=3, "large"	columella	no
NMNH	A423323		*Busycon sinistrum*	drilled through center	columella	no
OMNH	Lf40/952m		*Busycon sinistrum*	n=4, convexo-cylindrical	columella	no
OMNH	LfCrI	B51-6b	*Busycon sinistrum*	n=4, med/large barrel	columella	no
NMNH	A423323		*Busycon sinistrum*	drilled through center	columella	no
OMNH	LfCrI	B44-57		n=16, med barrel, "convexo-cylindrical"	columella	no
OMNH		B48-39a	*Busycon sinistrum*	n=21, large barrel	columella	no
OMNH		B48-39a		n=2	columella	no
OMNH		B44-57		n=15, "convexo-cylindrical"	columella	no
NMNH	A423314			large barrel	columella	no
NMNH	A423314		*Busycon sinistrum*	large barrel	columella	no
NMNH	A423326		*Busycon sinistrum*	large barrel	columella	no
NMNH	A423324		*Olivella* spp.	apex cut for stringing	whole	no
NMNH	A423325		*Busycon sinistrum*	large barrel	columella	no
NMNH	A423325		*Busycon sinistrum*	large barrel	columella	no
OMNH	Lf40/952d	a/77/2/1	cf. *Thais*	ID'd as Drupa or Thais; pink/purple tinge, ground apex	whole	no
NMNH	A448734		*Olivella* spp.	200?		no
Gilcrease	902.5.592		*Busycon sinistrum*	drilled all the way through	columella	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	Lf40/951j		*Busycon sinistrum*	med. barrel, n=7	columella	no
NMAI	20/231		*Busycon sinistrum*	WC Barnard collection	columella	no
NMAI	20/231		*Busycon sinistrum*	WC Barnard collection	columella	no
OMNH	LfCrl1	A16-19	*Busycon sinistrum*	med/large cylinder	columella	no
OMNH	LfCrl1	A16-11	*Busycon sinistrum*	"total 437" by WPA convexo-cylindrical med/large barrel	columella	no
OMNH	LfCrl1	A16-8	*Pleuroploca gigantea*		columella	no
OMNH	Lf40/951g		*Busycon sinistrum*	n=5, large	columella	no
Gilcrease	9025.800		*Busycon sinistrum*	medium barrel beads, n=28	columella	no
OMNH	Lf40/953f		*Busycon sinistrum*		columella	no
Gilcrease	9025.647		*Busycon sinistrum*	n=25	columella	no
OMNH	Lf40/953j		*Busycon sinistrum*	3 sinistral, "compound cylindrical"	columella	no
Gilcrease	9025.647		*Pleuroploca gigantea*	n=4	columella	no
NMNH	A423326			medium barrel	columella	no
OMNH	Lf40/953h		*Busycon sinistrum*	5 sinistral, "concavo-cylindrical"	columella	no
NMNH	A423326			medium barrel	columella	no
OMNH	Lf40/953d		*Busycon sinistrum*	n=4 sinistral, 1 dextral	columella	no
Gilcrease	9025.648		*Pleuroploca gigantea*	n=1, large sphere	columella	no
NMNH	A448725		*Busycon sinistrum*	large barrel		no
NMNH	A423331		*Olivella* spp.	202.9 grams (a number of beads)		no
NMNH	A542536		*Olivella* spp.			no
NMNH	A423323			no double groove, drilled through center	columella	no
OMNH	LfCrl1	A11-29		med barrel	columella	no
NMAI	22/350		*Olivella* spp.			no
Gilcrease	9025.1697	B62-8	*Busycon sinistrum*	P+B fig. 95 + fig 77	whole	yes
Gilcrease	9025.541		*Busycon sinistrum*	P+B figs. 76, 129, 134; siphonal canal drilled	outer whorl only	yes
OMNH	LfCrl1	B62-152	*Busycon sinistrum*	with B62-294, P+B pl 70b	spire frag	yes
Gilcrease	9025.1680	B23-36	*Busycon sinistrum*		spire frag. only	yes
OMNH	LfCrl	#754tunnel	*Busycon sinistrum*	sanded	siphonal canal + frag. outer whorl	no
OMNH	LfCrl1	B62-453	*Busycon sinistrum*		frag of apex + spire	yes
OMNH	LfCrl1	A11-23	*Busycon sinistrum*	whole	apex, shoulder, spire, outer whorl	no
OMNH	Lf40/33	A/57-58/20	*Busycon sinistrum*	P+B pl. 85, falcon man design	whole	yes

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	Lf40/692	Hamilton	*Busycon sinistrum*	uktena design	whole	yes
OMNH	LfCrI1	B54-31,32	*Pleuroploca gigantea*			no
OMNH	LfCrI1	D250-4	*Pleuroploca gigantea*	columella removed	apex + spire only	no
OMNH	Lf40-833		*Busycon sinistrum*		outer whorl at division	no
Gilcrease	9025.1622	B126-3	*Busycon sinistrum*	sanded	apex + spire only	yes
OMNH	LfCrI	#754tunnel	*Busycon sinistrum*	sanded	siphonal canal + frag. outer whorl	no
Gilcrease	9025.386		*Busycon sinistrum*	sanded, gracile; P+B figs. 85, 101, 134	whole	yes
OMNH	LfCrI	#754tunnel	*Busycon sinistrum*	sanded	siphonal canal + frag. outer whorl	no
OMNH	LfCrI	#754tunnel	*Busycon sinistrum*	sanded	siphonal canal + frag. outer whorl	no
OMNH	Lf40-17	B33-2	*Busycon sinistrum*	outer whorl; Brown 1976 vol. 4, Fig. 82f	outer whorl	yes
OMNH	LfCrI1	B62-228	*Busycon sinistrum*	cut columella; P+B vol.3 pl. 96.1 rI	outer whorl	yes
OMNH	LfCrI1	B62-253	*Busycon sinistrum*		at columella removal point + siphonal canal	yes
Gilcrease	9025.554	1857	*Busycon sinistrum*		outer whorl at lip	yes
OMNH	Lf40/735?	B108-10	*Busycon sinistrum*	columella cut	outer whorl	no
Gilcrease	9025.1612	B44-12	*Busycon sinistrum*	siphonal tip	siphonal canal	yes
Gilcrease	9025.553		*Busycon sinistrum*	P+B pl. 242a	part. spire	yes
Gilcrease	9025.587		*Busycon sinistrum*		outer whorl at lip	yes
OMNH	Lf40-833		*Busycon sinistrum*		apex only	no
Gilcrease	9025.1706	D182	*Busycon sinistrum*	large cup	outer whorl at lip + spire	yes
Gilcrease	9025.1670	B69-6	*Busycon sinistrum*		spire, frag. apex	yes
Gilcrease	9025.1557	A26-28	*Busycon sinistrum*	gravelot	frag from shoulder	yes
Gilcrease	9025.1478	B62-139	*Busycon sinistrum*	max thickness outer whorl=5.5, bas relief	outer whorl at lip	yes
Gilcrease	9025.1589	B23-83	*Busycon sinistrum*		partial outer whorl	yes
Gilcrease	9025.1564	B156-9	*Busycon sinistrum*	max. width of outer whorl=12.3mm	outer whorl	yes
Gilcrease	9025.1646	D86-4	*Busycon sinistrum*	lirate	apex + partial spire	yes
Gilcrease	9025.1472	B62-52	*Busycon sinistrum*		apex, spire, frag. of outer whorl	yes
Gilcrease	9025.547		*Busycon sinistrum*	gracile shell		yes
Gilcrease	9025.1705	D86-2	*Busycon sinistrum*	falcon-eye design	partial spire	yes
Gilcrease	9025.1746	D63+	*Busycon sinistrum*		partial spire	yes
Gilcrease	9025.1623	B62-33	*Busycon sinistrum*		outer whorl fragment	yes
Gilcrease	9025.1471	B62-132	*Busycon sinistrum*	large cup	outer whorl at lip + spire	yes

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
Gilcrease	9025.1719	B62-112c	*Busycon sinistrum*			yes
Gilcrease	9025.1519	B23-46	*Busycon sinistrum*		partial spire	yes
Gilcrease	9025.1682	B62-73	*Busycon sinistrum*		partial spire	yes
Gilcrease	9025.544		*Busycon sinistrum*		apex, spire	yes
Gilcrease	9025.1642	D63+	*Busycon sinistrum*		spire frag.	yes
Gilcrease	9025.1647	D184	*Busycon sinistrum*		apex, most of spire	yes
Gilcrease	9025.1688	B47-9	*Busycon sinistrum*		apex + partial spire	yes
Gilcrease	9025.1696	B108-20	*Busycon sinistrum*		lower 2/3 of outer whorl	yes
Gilcrease		B62-115	*Busycon sinistrum*		apex+partial spire	yes
Gilcrease	9025.		*Busycon sinistrum*		whole	yes
Gilcrease	9025.1583	A26-60	*Pleuroploca gigantea*		partial outer whorl	yes
Gilcrease	9025.1642	D63+	*Busycon sinistrum*		spire frag.	yes
Gilcrease	9025.1647	D184	*Busycon sinistrum*		apex, most of spire	yes
Gilcrease	9025.1643	B62-160	*Busycon sinistrum*	ref. Brown 1966 vol. 2 p. 114	portion of outer whorl	yes
Gilcrease	9025.1607	A26-26	*Busycon sinistrum*	ref. Brown 1966, vol. 2, p. 30	partial spire	yes
Gilcrease	9025.1695	B62-12	*Busycon sinistrum*		partial outer whorl at lip + spire	yes
Gilcrease	9025.1751	B155-81	*Busycon sinistrum*	sanded; ant. 1/3 and posterior 1/4 gone	outer whorl only	no
Gilcrease	9025.599E		*Busycon sinistrum*	sanded, apex tip gone	outer whorl, spire	no
Gilcrease	9025.1473	B62-10	*Busycon sinistrum*	sanded, siphonal canal drilled	whole	yes
Gilcrease	9025.0		*Busycon sinistrum*	sanded	outer whorl only	no
Gilcrease	9025.1720	A11-15	*Busycon sinistrum*	sanded	whole	no
Gilcrease	9025.1731	B155-66	*Busycon sinistrum*	sanded	outer whorl only	no
Gilcrease	9025.5994		*Busycon sinistrum*	sanded, ant. 1/2 gone	spire, apex, part. outer whorl	no
Gilcrease	9025.1723	A11-18	*Busycon sinistrum*	sanded, siphonal canal drilled	whole	no
Gilcrease	9025.1736	B155-79	*Busycon sinistrum*		spire + apex only	no
Gilcrease	9025.1725	B155-96	*Busycon sinistrum*	sanded	outer whorl only	no
Gilcrease	9025.1727a	B155-73b	*Busycon sinistrum*	sanded; almost whole	whole	yes
Gilcrease	9025.1721	A11-17	*Busycon sinistrum*	sanded; siphonal canal gone	whole	no
Gilcrease	9025.598		*Busycon sinistrum*	ant. 1/4 gone	whole	no
Gilcrease	9025.1641	B62-87	*Busycon sinistrum*	max thickness outer whorl=9.8	outer whorl	yes
Gilcrease	9025.1724a	A11-28	*Busycon sinistrum*	sanded; siphonal canal gone	outer whorl, spire	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
Gilcrease	9025.1728	B155-97	*Busycon sinistrum*	well-sanded, apex gone	outer whorl only	no
Gilcrease	9025.1666	B23-53	*Busycon sinistrum*	max thickness outer whorl=9.4	outer whorl	yes
Gilcrease	9025.1752	B155-1752	*Pleuroploca gigantea*	columella carefully removed, remnant sanded	apex + spire only	no
Gilcrease	9025.1737	B155-90	*Busycon sinistrum*	adult indiv.	apex + spire only	no
Gilcrease	9025.1734	B155-60	*Busycon sinistrum*	large indiv.	apex + spire only	no
Gilcrease	9025.1748	B155-71	*Busycon sinistrum*	sanded; drilled through spire	whole	no
Gilcrease	9025.1776	B8-17	*Busycon sinistrum*	whole	whole	no
Gilcrease	9025.546		*Busycon sinistrum*	P+B pl. 278a	apex + spire only	yes
Gilcrease	9025.1745	A11-38	*Busycon sinistrum*	not sanded	outer whorl, partial spire	no
Gilcrease	9025.1750	A11-13	*Busycon sinistrum*	sanded	outer whorl, spire only	no
Gilcrease	9025.1749	B36-36	*Busycon sinistrum*	sanded, almost whole	outer whorl, spire	no
Gilcrease	9025.5991		*Busycon sinistrum*	sanded, anterior 1/2 gone	apex + outer whorl	no
Gilcrease	9025.1753	B155-58	*Busycon sinistrum*	sanded, posterior 1/3 gone	apex, spire, part. outer whorl	no
Gilcrease	9025.5993		*Busycon sinistrum*	whole, portion of outer whorl gone	whole	no
Gilcrease	9025.1722	A11-11	*Busycon sinistrum*	apex gone; gracile	whole	no
Gilcrease	9025.1729	B155-82	*Busycon sinistrum*		apex, spire only	no
OMNH	LfCrI1	B156-15	*Busycon sinistrum*	siphonal canal gone, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrI1	B156-3	*Busycon sinistrum*	sanded, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrI	B44	*Busycon sinistrum*		outer whorl at cut columella	no
OMNH	LfCrI1	B8-16	*Busycon sinistrum*	sanded, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrI1	B8-13	*Busycon sinistrum*	sanded, apex tip gone	apex, shoulder, spire, outer whorl	no
OMNH	LfCrI1	B8-20	*Busycon sinistrum*	sanded, siphonal canal gone, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrI	B108-10	*Busycon sinistrum*		outer whorl at division	no
OMNH	LfCrI1	B8-11	*Busycon sinistrum*	sanded, siphonal canal gone, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrI1	B156-8	*Busycon sinistrum*	sanded, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrI1	B62-455	*Busycon sinistrum*	siphonal canal gone, small spines	apex, shoulder, spire, outer whorl	no
OMNH	LfCrI1	B62-111	*Busycon sinistrum*	sanded, siphonal canal gone, apex ground down	apex, shoulder, spire, outer whorl	no
OMNH	LfCrI1	B62-2a	*Busycon sinistrum*	sanded, siphonal canal gone	apex, shoulder, spire, outer whorl	no
OMNH			*Busycon sinistrum*		apex, spire, frag outer whorl	
OMNH			*Busycon sinistrum*	sanded, siphonal canal gone	apex, shoulder, spire, outer whorl	no
OMNH	LfCrI	stake 14:4	*Busycon sinistrum*	sanded, siphonal canal gone	apex, shoulder, spire, outer whorl	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	LfCrl	B62-107	*Busycon sinistrum*	sanded	apex	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at columella cut	no
OMNH	LfCrl1	B8-19	*Busycon sinistrum*	sanded, siphonal canal gone, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	A11-22	*Busycon sinistrum*	whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	B108-76	*Busycon sinistrum*	or B36-14d	outer whorl + part spire	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at division	no
OMNH	LfCrl1	D250-2	*Busycon sinistrum*	siphonal canal gone	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	A11-35	*Busycon sinistrum*	sanded, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	A11-32	*Busycon sinistrum*	sanded, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	B8-25	*Busycon sinistrum*	sanded, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	A6-15	*Busycon sinistrum*	whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	B156-12	*Busycon sinistrum*	sanded, whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	A11-20	*Busycon sinistrum*	whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	A11-27	*Busycon sinistrum*	whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	A11-24	*Busycon sinistrum*	whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	A11-12	*Busycon sinistrum*	whole, apex gone	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	A11-9	*Busycon sinistrum*	whole	apex, shoulder, spire, outer whorl	no
OMNH	LfCrl1	B54-30	*Busycon sinistrum*	sanded, whole	apex, shoulder, spire, outer whorl	no
OMNH	Lf40/692	HWH55	*Busycon sinistrum*	whole, antlered human design	apex, shoulder, spire, outer whorl	yes
OMNH	Lf40/21		*Pleuroploca gigantea*		partial spire	no
OMNH	LfCrl1	A11-10	*Busycon sinistrum*	sanded, whole	apex, shoulder, spire, outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*		siphonal canal + frag outer whorl	no
OMNH	LfCrl	B163-1	*Busycon sinistrum*	sanded	outer whorl, columella cut, siphonal canal	no
OMNH	Lf40/833		*Busycon sinistrum*	longitu. length	siphonal canal + frag outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*		siphonal canal + frag outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*		siphonal canal + frag outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*		siphonal canal + frag outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	longitu. length	siphonal canal + frag outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*		siphonal canal + frag outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	longitu. length	siphonal canal + frag outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*		siphonal canal + frag outer whorl	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	LfCrI1	A11-21	*Busycon sinistrum*	whole, drilled siphonal canal	apex, shoulder, spire, outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at columella cut	no
OMNH	LfCrI1	B62-324	*Busycon sinistrum*		outer whorl at columella cut	yes
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at columella cut	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at columella cut	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at columella cut	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded, greatest length	apex + part. spire	no
OMNH	Lf40/833		*Busycon sinistrum*		siphonal canal + frag outer whorl	no
OMNH	LfCrI	stake 16:0	*Busycon sinistrum*	sanded	outer whorl + shoulder frag at lip	no
OMNH	LfCrI	B108-10	*Busycon sinistrum*		outer whorl at division	no
OMNH	LfCrI	B108-10	*Busycon sinistrum*		outer whorl at division	no
OMNH	LfCrI	B108-10	*Busycon sinistrum*	sanded	outer whorl, shoulder	no
OMNH	LfCrI	B108-10	*Busycon sinistrum*	sanded	outer whorl, shoulder	no
OMNH	LfCrI	B44	*Busycon sinistrum*	sanded,	outer whorl at cut columella	no
OMNH	LfCrI	B44	*Busycon sinistrum*	sanded,	outer whorl at cut columella	no
OMNH	Lf40/833		*Busycon sinistrum*	longitu. length	siphonal canal + frag outer whorl	no
OMNH	LfCrI	B44	*Busycon sinistrum*	sanded, anterior 1/3	siphonal canal, outer whorl at cut columella	no
NMNH	423228	228126	*Busycon sinistrum*	sanded.	sanded	no
OMNH	LfCrI	stake 16:0	*Busycon sinistrum*	drilled siphonal canal, sanded	columella + part outer whorl	no
OMNH	LfCrI1	B156-11	*Busycon sinistrum*	sanded, almost whole, part outer whorl gone	apex, outer whorl, shoulder	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded	outer whorl at division + siphonal canal	no
OMNH	Lf40/833		*Busycon sinistrum*	longitu. length, sanded	apex + spire	no
OMNH	Lf40/833		*Busycon sinistrum*	longitu. length, sanded	apex + spire	no
OMNH	Lf40/833		*Busycon sinistrum*	longitu. length, sanded	apex + spire	no
OMNH	Lf40/833		*Busycon sinistrum*	longitu. length, sanded	apex + spire	no
OMNH	Lf40/833		*Busycon sinistrum*	longitu. length, sanded	apex + spire	no
OMNH	LfCrI	B44	*Busycon sinistrum*	sanded, anterior 1/3	siphonal canal, outer whorl at cut columella	no
NMNH	A423228		*Busycon sinistrum*	sanded, siph. tip gone		no
NMNH	A423228		*Busycon sinistrum*	sanded, ant. 1/2 gone	-	no
NMNH	A423241		*Busycon sinistrum*	2 humans w/head toward apex		yes
NMNH	A423228		*Busycon sinistrum*	sanded, siph. tip gone		no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
NMNH	A423228		*Busycon sinistrum*	sanded, siph. tip gone		no
NMNH	A423228		*Busycon sinistrum*	sanded		no
NMNH	A423240		*Busycon sinistrum*	siph. tip gone		yes
NMNH	A423228		*Busycon sinistrum*	sanded, siph. tip gone		no
NMNH	A423228		*Busycon sinistrum*	sanded, whole		no
NMNH	A423250		*Busycon sinistrum*			yes
NMNH	A423255		*Busycon sinistrum*	ant. 1/2 gone, horned snake		yes
NMNH	A423252		*Busycon sinistrum*	ant. 1/2 gone, armadillo?		yes
NMNH	A423263		*Busycon sinistrum*	ant. 1/2 gone, snake design		yes
NMNH	A423260		*Busycon sinistrum*	ant. 1/2 gone, snake & human head		yes
NMNH	A423239		*Busycon sinistrum*	eagle talon & snake		yes
NMNH	A423244		*Busycon sinistrum*	siph tip gone,		yes
OMNH	LfCrl1	D250-6	*Busycon sinistrum*	siphonal canal gone	apex, shoulder, spire, outer whorl	no
NMNH	A423228		*Busycon sinistrum*	sanded		no
NMNH	A448813		*Busycon sinistrum*	snake w/eagle talon		yes
SMAP		955	*Busycon sinistrum*			no
SMAP		955	*Busycon sinistrum*			no
NMNH	A378243		*Busycon sinistrum*	sanded, siph tip gone		no
NMNH	A378243		*Busycon sinistrum*	sanded, ant 1/2 gone		no
NMNH	A378243		*Busycon sinistrum*	sanded, siph canal gone		no
NMNH	A423228		*Busycon sinistrum*	sanded, ant. 1/2 gone		no
NMNH	A448808		*Busycon sinistrum*	raccoons, whole		yes
NMNH	A423228		*Busycon sinistrum*	sanded, siph. canal gone		no
NMNH	A448811		*Busycon sinistrum*	skulls, whole		yes
NMNH	A448809		*Busycon sinistrum*	siph tip gone, broken arrow w/snake		yes
NMNH	A448810		*Busycon sinistrum*	siph tip gone		yes
NMNH	A423228		*Busycon sinistrum*	sanded, siph tip gone		no
NMNH	A423228		*Busycon sinistrum*	sanded, ant. 1/2 gone		no
NMNH	A423228		*Busycon sinistrum*	sanded, ant. 1/2 gone	-	no
NMNH	A423228		*Busycon sinistrum*	sanded, whole		no
NMNH	A423228		*Busycon sinistrum*	sanded, siph canal gone		no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
NMNH	A448807		*Busycon sinistrum*	spirals, whole		yes
NMNH	A448782		*Busycon sinistrum*	sanded, crudely made		no
NMNH	A423242		*Busycon sinistrum*	siph. tip gone, broken arrow design		yes
NMNH	A448880		*Busycon sinistrum*	siphonal canal broken, head/ogee design		yes
NMNH	A448786		*Busycon sinistrum*	siphonal canal broken, hand-snake design		yes
NMNH	A448788		*Busycon sinistrum*	siphonal canal broken, horned snake design		yes
NMNH	A448789		*Busycon sinistrum*	drilled siphonal canal, rattlesnake design		yes
NMNH	A448798		*Busycon sinistrum*			yes
NMNH	A448787		*Busycon sinistrum*	ant. end broken, eagle feather design		yes
NMNH	A448797		*Busycon sinistrum*	siphonal canal broken		yes
NMNH	A448872		*Busycon sinistrum*	siphonal canal broken		no
NMNH	A542538		*Busycon sinistrum*	sanded, almost whole		no
NMNH	A423288	2734	*Pleuroploca gigantea*	drilled on shoulder at rim	outer whorl, apex	yes
NMNH	A423226		*Pleuroploca gigantea*	sanded, spire broken off, drilled on shoulder at rim	outer whorl, apex	no
NMNH	448796		*Busycon sinistrum*	piece missing on outer whorl, slightly turreted	whole	yes
NMNH	448793		*Busycon sinistrum*	sanded, unfinished snake design	whole	yes
NMNH	423228		*Busycon sinistrum*	sanded	whole	no
NMNH	423228		*Busycon sinistrum*	sanded	sanded, whole	no
NMNH	A448790		*Busycon sinistrum*	skull & broken forearm design		yes
NMNH	A448799		*Busycon sinistrum*	2 humans, heads toward apex		yes
NMNH	A423232	field#2880	*Busycon sinistrum*	sanded		no
NMNH	A423232	field#2879	*Busycon sinistrum*	sanded siph. canal gone		no
NMNH	A423232	field#2759	*Busycon sinistrum*	sanded, spines worked, no design, siph. canal gone		no
NMNH	A423232	field#2758	*Busycon sinistrum*	anterior 1/2 gone, sanded		no
NMNH	A448878		*Busycon sinistrum*	anterior 1/2 gone		yes
NMNH	A423238		*Busycon sinistrum*	human figure. whole cup		yes
NMNH	A448783		*Busycon sinistrum*	siphonal canal broken, antlered snake design		yes
NMNH	A423233		*Busycon sinistrum*	siphonal canal gone, sanded, wrapped in red yarn		no
NMNH	423228		*Busycon sinistrum*	sanded	sanded	no
NMNH	A448804		*Busycon sinistrum*	columella not completely removed		yes
NMNH	A448800		*Busycon sinistrum*	eagle dancer		yes

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
NMNH	A448803		*Busycon sinistrum*	siphonal canal gone, cross-hatch design		yes
NMNH	A448806		*Busycon sinistrum*			yes
NMNH	A448805		*Busycon sinistrum*	siphonal canal gone, Lamar potter design		yes
NMNH	A448802		*Busycon sinistrum*	engle dancer		yes
NMNH	A448792		*Busycon sinistrum*	siphonal canal broken		yes
NMNH	A448794		*Busycon sinistrum*	siphonal canal broken		yes
NMNH	A423237	2910	*Busycon sinistrum*			yes
OMNH	Lf40/748		*Busycon sinistrum*	sanded	spire frag	no
OMNH	Lf40/833		*Busycon sinistrum*		spire + shoulder, lip area	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded, drilled	outer whorl frag	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded	outer whorl frag	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded	spire frag	no
OMNH	LfCrI1	B62-320	*Busycon sinistrum*		part. siphonal canal + outer whorl	yes
OMNH	Lf40/748		*Busycon sinistrum*	sanded	outer whorl + cut columella area	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded	spire frag	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded	outer whorl + cut columella area	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded	apex + part spire	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded, drilled	apex + part spire	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded	apex + part spire	no
OMNH	Lf40/754		*Busycon sinistrum*	sanded	outer whorl	no
OMNH	Lf40/754		*Busycon sinistrum*	sanded	outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length	spire + shoulder	no
OMNH	Lf40/754		*Busycon sinistrum*	sanded; shoulder angle at lip	shoulder + part spire	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded	spire frag	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded	apex + part. spire	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length	spire + shoulder	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length	spire + shoulder	no
OMNH	Lf40/833		*Busycon sinistrum*		spire + shoulder, lip area	no
OMNH	Lf40/833		*Busycon sinistrum*		spire + shoulder, lip area	no
OMNH	Lf40/833		*Busycon sinistrum*	not sanded, lirate, slightly turreted	apex + part. spire	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded	outer whorl + cut columella area	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	LfCrl1	B62-321	*Busycon sinistrum*		part. siphonal canal + outer whorl	yes
OMNH	Lf40/754		*Busycon sinistrum*	sanded; shoulder angle at lip	shoulder + part spire	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded	apex + part. spire	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded	apex + part. spire	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded	apex + part. spire	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at division	no
OMNH	Lf40/833		*Busycon sinistrum*		siphonal canal + frag outer whorl	no
OMNH	LfCrl1	B62-392	*Busycon sinistrum*		frag near columella cut	yes
OMNH	Lf40/748		*Busycon sinistrum*	sanded	siphonal canal + part. outer whorl	no
OMNH	Lf40/748		*Busycon sinistrum*	sanded	siphonal canal + part. outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded, drilled	apex + part. spire	no
OMNH	LfCrl1	B62-267	*Busycon sinistrum*		spire frag	yes
OMNH	Lf40/754		*Busycon sinistrum*	sanded	outer whorl	no
OMNH	LfCrl1	B62-224	*Busycon sinistrum*	posterior frag of columella cut	outer whorl	yes
OMNH	LfCrl1	B62-11	*Busycon sinistrum*		outer whorl	yes
OMNH	LfCrl1	B62-51	*Busycon sinistrum*		partial spire around apex	yes
OMNH	LfCrl1	B62-218	*Busycon sinistrum*	P+B pl. 22 I	outer whorl near siphonal canal	yes
OMNH	LfCrl1	B62-60	*Busycon sinistrum*	P+B pl. 112	outer whorl, part. shoulder	yes
OMNH	LfCrl1	B62-293	*Busycon sinistrum*		apex + part. spire	yes
OMNH	LfCrl1	B62-74	*Busycon sinistrum*	P+B pl. 55? or 56? - human head facing anterior of shell	outer whorl	yes
OMNH	LfCrl1	B62-287	*Busycon sinistrum*		spire frag	yes
OMNH	LfCrl1	B62-220	*Busycon sinistrum*		spire frag	yes
OMNH	LfCrl1	B62-89	*Busycon sinistrum*	drilled through outer whorl	part. siphonal canal	yes
OMNH	LfCrl1	B62-6	*Busycon sinistrum*	jaguar head w/falcon eye, human ear	part. spire	yes
OMNH	LfCrl1	B62-323	*Busycon sinistrum*		spire frag	yes
OMNH	LfCrl1	B62-377	*Busycon sinistrum*		siphonal canal	yes
OMNH	LfCrl1	B62-332	*Busycon sinistrum*		part. spire	yes
OMNH	LfCrl1	B62-290	*Busycon sinistrum*		spire frag at lip	yes
OMNH	Lf40/754		*Busycon sinistrum*	sanded	apex + spire	no
OMNH	Lf40/754		*Busycon sinistrum*	sanded; shoulder angle at lip	shoulder + part spire	no
OMNH	Lf40/754		*Busycon sinistrum*	sanded	part. outer whorl + siphonal canal	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	Lf40/754		*Busycon sinistrum*	sanded	part. outer whorl + siphonal canal	no
OMNH	Lf40/754		*Busycon sinistrum*	sanded	part. outer whorl + siphonal canal	no
OMNH	Lf40/754		*Busycon sinistrum*	sanded, siphonal canal drilled	part. outer whorl + siphonal canal	no
OMNH	LfCrl1	B62-209	*Busycon sinistrum*	P+B pl. 27.1	siphonal canal	yes
OMNH	Lf40/754		*Busycon sinistrum*	sanded, no siphonal canal	partial outer whorl	no
OMNH	Lf40/754		*Busycon sinistrum*	sanded; shoulder angle at lip	shoulder + part spire	no
OMNH	Lf40/754		*Busycon sinistrum*	sanded	apex + spire	no
OMNH	Lf40/754		*Busycon sinistrum*	sanded	apex + spire	no
OMNH	LfCrl1	B62-7	*Busycon sinistrum*	antlered human fig. facing away from each other w/snake	most of cup, w/o siphonal canal	yes
OMNH	LfCrl1	B62-50	*Busycon sinistrum*		most of outer whorl	yes
OMNH	LfCrl1	B62-13	*Busycon sinistrum*	drilled through siphonal canal. Human figure.	outer whorl frag. from siphonal canal to spire	yes
OMNH	LfCrl1	B62-9a	*Busycon sinistrum*	P+B pl. 29, most of cup below spire	outer whorl	yes
OMNH	LfCrl1	B62-70	*Busycon sinistrum*	P+B pl. 56, "raccoon on tree"	outer whorl	yes
OMNH	LfCrl1	B62-67	*Busycon sinistrum*	drilled through spire	apex + spire	yes
OMNH	Lf40/754		*Busycon sinistrum*	sanded, no siphonal canal	partial outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded, drilled	apex + part. spire	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length, sanded	frag spire + part outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at division	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded, drilled near columella	part outer whorl + columella cut	no
OMNH	LfCrl1	B62-317	*Busycon sinistrum*		siphonal canal	yes
OMNH	Lf40/833		*Busycon sinistrum*	length measured longitudinally	apex + partial spire	no
OMNH	Lf40/833		*Busycon sinistrum*	length measured longitudinally	apex + partial spire	no
OMNH	Lf40/833		*Busycon sinistrum*	length measured longitudinally	apex + partial spire	no
OMNH	Lf40/833		*Busycon sinistrum*	length measured longitudinally	apex + partial spire	no
OMNH	Lf40/833		*Busycon sinistrum*	length measured longitudinally	apex + partial spire	no
OMNH	Lf40/833		*Busycon sinistrum*	length measured longitudinally	apex + partial spire	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded	outer whorl at division + lip	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*	length measured longitudinally	apex + partial spire	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	Lf40/833		*Busycon sinistrum*	sanded	outer whorl at division + lip	no
OMNH	Lf40/833		*Busycon sinistrum*	length measured longitudinally	apex + partial spire	no
OMNH	LfCrl1	B62-341	*Busycon sinistrum*		shoulder area	yes
OMNH	Lf40/833		*Busycon sinistrum*	length measured longitudinally	apex + partial spire	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length	partial spire	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length	partial spire	no
OMNH	Lf40/833		*Busycon sinistrum*	sanded	outer whorl at division + lip	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length	partial spire	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length, sanded	frag spire + part outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length, sanded	frag spire + part outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length, sanded	frag spire + part outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length, sanded	frag spire + part outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length, sanded	frag spire + part outer whorl	no
OMNH	LfCrl1	B62-328	*Busycon sinistrum*		frag near columella cut	yes
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at division	no
OMNH	Lf40/833		*Busycon sinistrum*	greatest length	spire + shoulder	no
OMNH	Lf40/833		*Busycon sinistrum*	drilled near shoulder	spire + shoulder	no
OMNH	Lf40/833		*Busycon sinistrum*	siphonal canal drilled. ant. 1/4 or 1/5	siphonal canal + outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at division	no
OMNH	Lf40/833		*Busycon sinistrum*	siphonal canal drilled. ant. 1/4 or 1/5	siphonal canal + outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	siphonal canal drilled. ant. 1/4 or 1/5	siphonal canal + outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	siphonal canal drilled. ant. 1/4 or 1/5	siphonal canal + outer whorl	no
OMNH	Lf40/833		*Busycon sinistrum*	anterior 1/5.	siphonal canal	no
OMNH	Lf40/833		*Busycon sinistrum*	anterior 1/5.	siphonal canal	no
OMNH	Lf40/833		*Busycon sinistrum*	anterior 1/5.	siphonal canal	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at division	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*	drilled near columella cut	outer whorl at mid-section	no
OMNH	Lf40/833		*Busycon sinistrum*		outer whorl at mid-section	no
OMNH	LfCrl1	B163-28	*Cassis madagascariensis*	sanded, lip only	lip only	no
OMNH	LfCrl1	B8-10	*Phyllonotus pomum*	drilled around aperture	whole	no
OMNH	LfCrl1	B156-13	*Pleuroploca gigantea*	columella removed	apex + spire only	no
Gilcrease	9025.1525	B23-51	*Busycon sinistrum*	max thickness outer whorl=10	outer whorl	yes
Gilcrease	9025.1665	B23-21	*Busycon sinistrum*	thickness at shoulder=11.8mm	partial spire	yes
Gilcrease	9025.1565	B23-38	*Busycon sinistrum*	max. thickness outer whorl=7.5, falcon feather design	outer whorl frag.	yes
OMNH	LfCrl1	B155-32	*Busycon sinistrum*		shoulder + part. outer whorl	yes
OMNH	Lf40/748	#748tunnel	*Pleuroploca gigantea*	sanded	partial spire, part. outer whorl	no
Gilcrease	9025.1732	B155-80	*Busycon sinistrum*	sanded, one drill hole	apex, spire only	no
Gilcrease	9025.1482	B62-11b	*Busycon sinistrum*		outer whorl near siphonal canal	yes
Gilcrease	9025.1775	B155-63	*Busycon sinistrum*	drilled siphonal canal tip, sanded	outer whorl, lower 1/2 of columella	no
Gilcrease	9025.1730	B155-89	*Busycon sinistrum*	sanded	spire + apex only	no
Gilcrease	9025.1735	B155-84	*Busycon sinistrum*		apex + spire only	no
OMNH		B80-6	*Busycon sinistrum*	sanded	apex only	no
NMNH	A448884		*Pleuroploca gigantea*	cut off along suture line, drilled along suture line, 3 hole	spire	no
Gilcrease	9025.1739	B155-67	*Busycon sinistrum*		apex, spire	no
OMNH	LfCrl1	B62-4	*Busycon sinistrum*		outer whorl	yes
OMNH	LfCrl1	B62-221	*Busycon sinistrum*		outer whorl	yes
Gilcrease	9025.600A		*Pleuroploca gigantea*	scored at both ends around circumference	columella only	no
SMAP		955	*Busycon sinistrum*		columella, part outer whorl, apex	no
OMNH	LfCrl	B5	*Busycon sinistrum*	"pendant", no signs of being worked	columella only	no
OMNH	LfCrl	stake 16:0	*Busycon sinistrum*		columella, + frag outer whorl	no
Gilcrease	9025.1762	B155-62	*Busycon sinistrum*		apex, columella, partial outer whorl	no
SMAP		955	*Busycon sinistrum*		columella, part. outer whorl	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	Lf40/833		*Busycon sinistrum*	anterior-most part	columella only	no
Gilcrease	9025.688		*Busycon sinistrum*	drilled	columella only	no
OMNH	Lf40-833		*Busycon sinistrum*		columella frag.	no
OMNH	LfCrI1	B36-23	*Busycon sinistrum*	2 holes at "bottom";Brown 76 vol 4 fig 81i; circle from mid	outer whorl	no
OMNH	LfCrI1	B108-9	*Busycon sinistrum*	design on inner shell; P+B pl. 277	outer whorl	yes
OMNH	LfCrI1	B108-4	*Busycon sinistrum*	design is right-side up on inner shell; P+B pl. 137	outer whorl only	yes
OMNH	LfCrI1	B62-2	*Busycon sinistrum*	design is "upside-down on inner part of shell	outer whorl only	yes
NMNH	A448746		*Pleuroploca gigantea*	engraved both sides	outer whorl	yes
NMNH	A448772		*Busycon sinistrum*	engraved on both sides		yes
OMNH	LfCrI	D302-1a	*Busycon sinistrum*	D302-1b is the same, P+B pl. 149	outer whorl	yes
Gilcrease	9025.537		*Busycon sinistrum*	outside engraving	outer whorl	yes
Gilcrease	9025.19		*Busycon sinistrum*	outside engraving - see drawing	outer whorl only	yes
Gilcrease	9025.683	D-1	*Busycon sinistrum*	design is "upside-down" on inside of shell	outer whorl	yes
Gilcrease	9025.538		*Busycon sinistrum*	square, w/square design	partial outer whorl, 2 drill holes	yes
Gilcrease	9025.1685	B108-112	*Busycon sinistrum*		outer whorl	yes
OMNH	LfCrI1	D-2	*Busycon sinistrum*	design is "upside-down" P+B pl. 133, Duffield pl. 5	outer whorl	yes
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448777		*Busycon sinistrum*	drilled at posterior end of columella		no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
Gilcrease	9025.597		*Busycon sinistrum*	typical pendant, drilled at siphonal canal	columella, apex	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448777		*Busycon sinistrum*	drilled at posterior end of columella		no
OMNH	Lf40/954		*Busycon sinistrum*	not beads, siphonal canal drilled	columella only	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	coluprella	no
NMAI	22/358A		*Busycon sinistrum*	sipb. tip drilled		no
NMAI	22/358A		*Busycon sinistrum*	siph. tip drilled		no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
SMAP		955	*Busycon sinistrum*	columella tip drilled		no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire, broken	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire, broken	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire, broken	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire, broken	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire, broken	spire, columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire, broken	spire, columella	no
NMNH	A448781		*Pleuroploca gigantea*		spire, columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	sanded	columella	no
NMNH	A448781		*Busycon sinistrum*	columella tip usu. broken off, sanded spire, broken	spire, columella	no
OMNH	LfCrI	B108-36	*Busycon sinistrum*	sanded	columella, apex	no
OMNH	LfCrI1	A11-6	*Busycon sinistrum*	sanded, whole	apex, columella, siphonal canal	no
OMNH	LfCrI1	A6-35	*Busycon sinistrum*	sanded, posterior 1/2 only	apex, columella	no
NMNH	A448780		*Busycon sinistrum*	sanded	columella	yes
OMNH	LfCrI1	A6-33	*Busycon sinistrum*	sanded, posterior 1/2 only, lirate	apex, columella	no
NMNH	A448777		*Busycon sinistrum*	drilled at posterior end of columella		no
OMNH	LfCrI1	A16-3	*Busycon sinistrum*	posterior 3/4	apex, columella	no
OMNH		D304-1i	*Crassostrea virginica*	left valve, drilled through hinge, drilled through edge	left valve	no
OMNH	LfCrI1	D250-20	*Oliva cf. sayana*	drilled siphonal canal, Brown 1976 vol. 4, fig. 73a	apex, shoulder, spire, outer whorl, columella	no
OMNH	LfCrI1	D222	*Anadara transversa*	left valve, Brown 1976 vol. 4, fig 73d	left valve	no
OMNH	Lf40/18	B62	*Crassostrea virginica*	drilled hinge (2 holes), left valve	left valve	no
OMNH	LfCrI	B108-38	*Busycon sinistrum*	sanded	columella, apex	no
NMNH	A448779		*Busycon sinistrum*	siphonal canal drilled, spire sanded	columella	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
OMNH	LfCrl	B108-30	*Busycon sinistrum*	sanded	columella, apex	no
OMNH	LfCrl1	A6-34	*Busycon sinistrum*	sanded, most present	apex, columella	no
OMNH	LfCrl	B108-29	*Busycon sinistrum*	sanded	columella, apex	no
OMNH	LfCrl	B108-27	*Busycon sinistrum*	sanded	columella, apex	no
OMNH	LfCrl	B108-24	*Busycon sinistrum*	sanded	columella, apex	no
OMNH	LfCrl1	B108-34	*Busycon sinistrum*	drilled siphonal canal	columella only	no
OMNH	LfCrl1	B108-34	*Busycon sinistrum*	drilled siphonal canal	columella only	no
OMNH	Lf40/954		*Busycon sinistrum*	not beads, siphonal canal drilled	columella only	no
OMNH	Lf40/952b	A/77/2/1	*Fasciolariidae*	siphonal canal only, n=1	columella	no
OMNH	Lf40/952b	A/77/2/1	*Busycon sinistrum*	siphonal canal only, n=2	columella	no
OMNH	Lf40/953m		*Oliva* spp.	anterior 1/2, drilled siphonal canal	siphonal canal only	no
OMNH	Lf40/953m		*Busycon sinistrum*	n=7, anterior only	siphonal canal only	no
Gilcrease	9025.540B		*Busycon sinistrum*	sanded; siphonal canal drilled	columella	no
Gilcrease	9025.540A		*Busycon sinistrum*	sanded, siphonal canal drilled, apex tip gone	columella	no
Gilcreasc	9025.523		*Busycon sinistrum*	siphonal canal drilled; lirate (juvenile)	almost whole	no
Gilcrease	9025.684		*Busycon sinistrum*	typical pendant, drilled at siphonal canal	columella, apex	no
OMNH	LfCrl	B108-35	*Busycon sinistrum*	sanded	columella, apex	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A448778		*Busycon sinistrum*	wrapped in matting	columella	no
NMNH	A423231	112735	*Busycon spp.*	copper traces, drilled siphonal canal	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A448779		*Busycon sinistrum*	siphonal canal drilled, spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no

Housed	Catalog #	Access. #	Taxon	Comments	Elements	Eng.
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A448779		*Busycon sinistrum*	siphonal canal drilled, spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A448779		*Busycon sinistrum*	siphonal canal drilled, spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A448779		*Busycon sinistrum*	siphonal canal drilled, spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A448779		*Busycon sinistrum*	siphonal canal drilled, spire sanded	columella	no
NMNH	A423305		*Busycon sinistrum*	spire sanded	columella	no
NMNH	A448779		*Busycon sinistrum*	siphonal canal drilled, spire sanded	columella	no
NMNH	A448779		*Busycon sinistrum*	siphonal canal drilled, spire sanded	columella	no
NMNH	A448768		*Oliva* spp.	broken		no
OMNH	LfCrI1	B88-7	*Busycon sinistrum*		apex + part. columella	no
OMNH	Lf40/951j		cf. *Thais*	IDd as Murex, drilled siphonal canal	whole	no
OMNH	LfCrI1	B62-436	*Oliva* spp.	drilled siphonal canal	ant. 1/2	no
OMNH	LfCrI1	B10	*Busycon sinistrum*	apex gone	columella, frag. outer whorl	no
OMNH	LfCrI	B158-3	*Busycon sinistrum*	lirate, no evidence of being worked	columella + frag apex	no
OMNH	Lf40-833		*Pleuroploca gigantea*	posterior 3/4	apex tip, frag. spire, columella	no

BIOGRAPHICAL SKETCH

Laura Kozuch was born in Illinois, and this perhaps explains her affinity toward the midwest states. She was always interested in animals, and at one time considered becoming a veterinary doctor. However, she was drawn ultimately to the field of archaeology. The difficult questions posed by archaeology were more intriguing, and Laura enjoys a challenge. The sub-field of zooarchaeology allows the study of both archaeology and zoology, and was the topic that most interested her.

She received her bachelor's degree in anthropology in 1987, with a minor in environmental studies. Laura received her interdisciplinary master's degree in zoology and anthropology in 1991, and her MA thesis was on shark remains from Florida. She has had extensive experience in working with Caribbean faunal remains, as well as Southeastern faunal remains of all types.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Elizabeth S. Wing, Chairperson
Professor of Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

John H. Moore
Professor of Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

William H. Marquardt
Professor of Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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This dissertation was submitted to the Graduate Faculty of the Department of Anthropology in the College of Liberal Arts and Sciences and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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